SUPPLEMENT.

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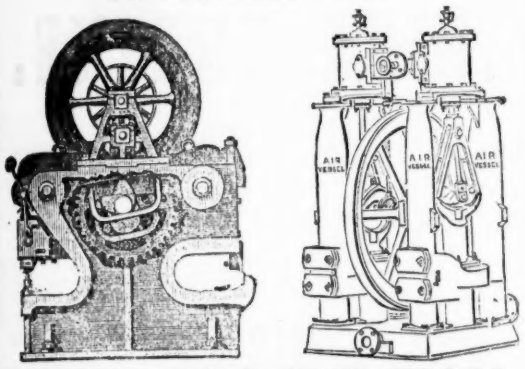

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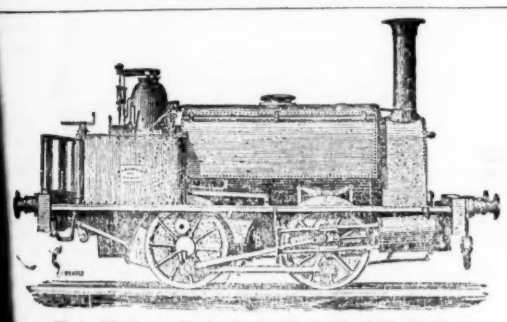

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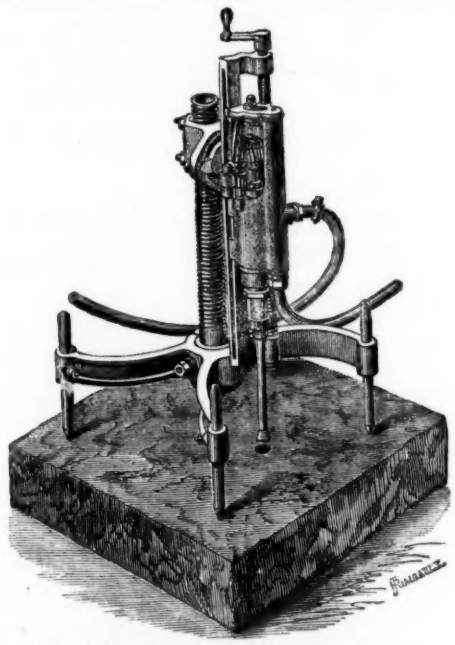

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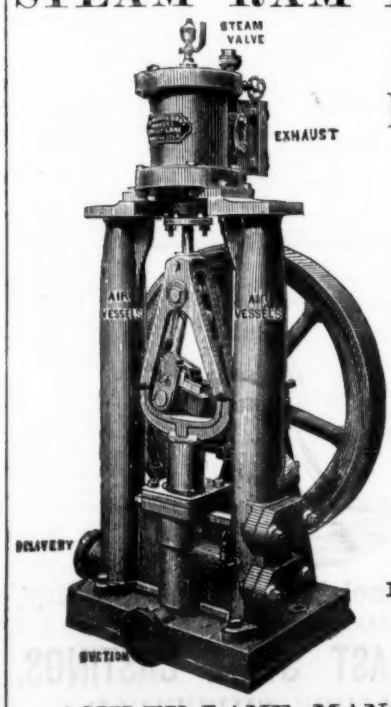

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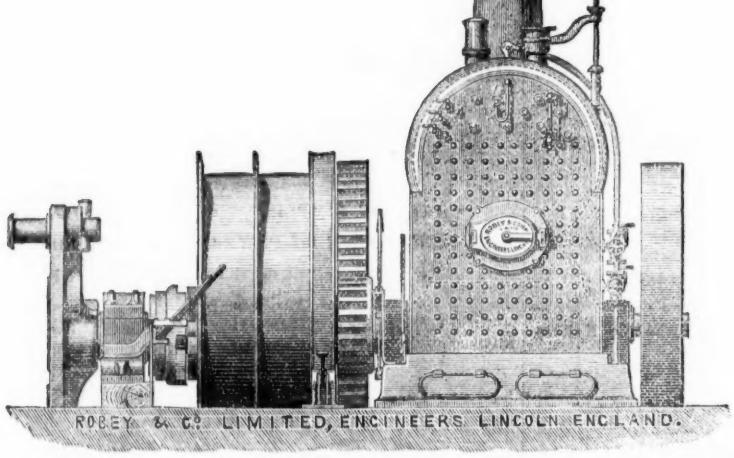

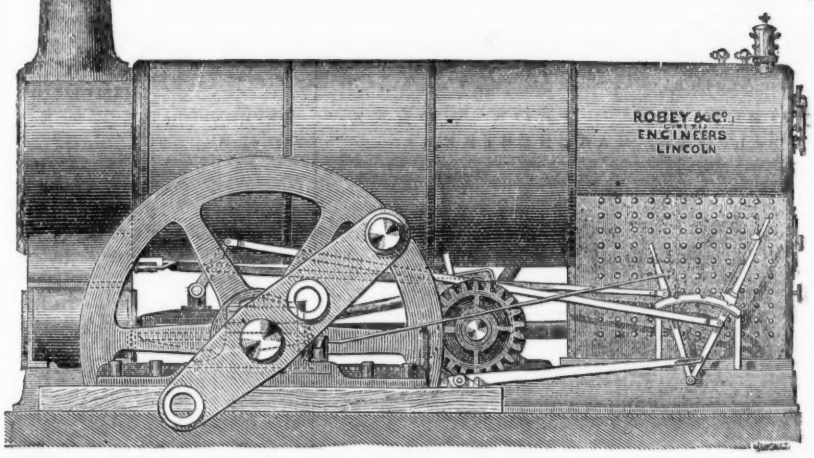

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Original Correspondence.

MINING ON THE PACIFIC COAST.

[FROM OUR CORRESPONDENT.]

San Francisco, Oct. 25.—The unfavourable character that has gone abroad with regard to mining speculations on this coast is attributable, in a great measure, to the want of proper caution on the part of European speculators. It is not an easy matter for everyone who has money to invest to assure himself of the merits of any particular enterprise at such a distance; but it is no less certain that if he enters into speculations blindfold, or is led away to the dazzling reports of a home corporation, with a few good names attached to its prospectus, he stands a fair chance of losing his money, and has no one but himself to blame for the result. The Mining Bureau of the Pacific Coast, which was established some three years ago, was so conducted as to forfeit all confidence. It has recently been re-organised as a reference for foreign investors in mines; it was openly attacked by the press of this city, and an action was brought by the President, Col. Berton, Vice-Consul of France at Sacramento, against the editors of the *San Francisco Chronicle* for slander. The facts that were elicited on the trial were considered of so damaging a character that Col. Berton not only lost his suit, but has ruined his chances of renewing relations with the mining interest of the Pacific Coast. The ignominious failure of the Mining Bureau, however, should not prevent the organisation of a corporate body, presided over by men of position and integrity in both countries, here and in England, who would sit in judgment on mines brought under their notice, on which they could pronounce a decided opinion, and thus in a measure protect the interests of investors both here and in Europe, and the necessity of something of the kind is felt in California as much as anywhere. It is generally supposed that we are all so acute in this part of the world as rather to be the aggressors instead of the parties taken in. But this is by no means the case, as is manifest by the numerous revelations of nearly daily occurrence, which fully prove that the people on the Pacific Coast are as gullable as most others, and very often the victims of misplaced confidence.

What is wanted is simply a body of honest men who will take the matter in hand, and of such we should find no lack in this community. We have mining engineers among us who are experienced and trustworthy men, whose integrity of purpose and ability have been fully tested. The establishment of such a tribunal for reporting on mining and other enterprises would, if properly conducted, command the support and assistance of the respectable part of the community here, whilst the directory or connection in London should be such as to secure the confidence of people abroad. The time has gone by when swindling transactions of whatever kind would be looked on with a lenient eye, and be only designated as smartness. They are no longer tolerated by a California public, but are fully exposed the moment they are understood. I have referred to this subject principally for the reason that those British investors who have, probably through their own indiscretion, been heavy losers on this coast, have laid the blame of their misfortunes on the country generally, and hence has arisen that want of confidence which has tended to keep foreign capital away from us.

The immense production of our mines appears to increase rather than to decrease, and the opportunities for investing capital profitably are multiplying not only in our mineral resources, but in many other ways. The bullion product for California last year was $18,052,722; Nevada, $35,254,507; Oregon, $1,376,389; Washington Territory, $209,395; Idaho, $2,343,654; Montana, $3,892,810; Utah, $4,106,331; Arizona, $47,778; Colorado, $4,083,568; Mexico (West Coast), $866,798: making a total of $72,258,693. During the previous year (1872) the total product from these States and Territories amounted to $62,236,913, showing an increase of over $10,000,000 for 1873. The production of our mines is estimated for California and Nevada over $50,000,000; Montana, $4,000,000; Idaho, $2,500,000; Oregon and Washington Territory, $1,500,000; Utah, $10,000,000; and other territories, $10,000,000.

The mining dividends recorded as paid in 1873 amounted to the sum of $13,356,000; the assessments for the same period being $6,729,743, leaving a profit to stockholders of $6,626,257, or over $500,000 a month during the year. This year the dividends will be much heavier than any preceding year. The coinage at our mint for the past nine months amounted to $19,942,000, as compared with $15,442,900 in 1873.

The neighbouring State of Nevada has been making rapid advance in the way of productions, which, like those of Utah, are chiefly silver. As a sample of what is done in the former State, it may be mentioned that the Belcher and Crown Point Mines alone yielded for the past two years $30,000,000, against $5,000,000 for two years previously, and that they continue to pay very handsome dividends to the stockholders. During the month of September 20,250 tons of ore were shipped by rail from mines on the Comstock, in addition to large quantities of ore hauled to mills in quartz wagons. From the success attending the sinking of the big air-shaft in the Belcher, it appears that the problem of the ventilatian of our mines is likely to meet with a satisfactory solution, and that this solution lies in the sinking of spacious air-shafts at proper intervals along the lead, which, reaching from the lowest levels to the surface, shall operate as huge chimneys to draw off the heated air of the regions below.

Other states and territories have decreased in their yield, with the exception of Colorado and New Mexico. When life and property are secure in Arizona, the development of its mineral wealth promises to rival that of any part of the Pacific Coast. The Sonora Company, which was incorporated for the purpose of working certain mineral estates in the Territory of Arizona and the adjoining State of Sonora, in Mexico, was organised under the auspices of British capitalists. The property acquired by the company comprises a tract of land of about 100,000 acres, rich in veins of ore, mostly silver and lead, with an average yield of over $100 per ton, situated on the Santa Cruz river, near the proposed line of the Texas and Pacific Railway. The company also possess a quantity of rich mineral land in other parts of the territory, which they purpose commencing to work immediately under the superintendence of Col. Boyle, who has recently come out in the capacity of their mining engineer and superintendent of mines.

The mines of Southern California, which are said to be extremely rich, are attracting a great deal of attention. They have been in a great measure overlooked, chiefly owing to their being in districts deficient in water for working. It is reported that a silver mine has been discovered near Los Angles, which bids fair to rival the Comstock in production. From San Bernardino and Holcombe Valley large and rich deposits have been discovered, which are likely at no distant period to add greatly to the mineral wealth of the State. About 60 miles from San Bernardino is the famous Temescal Tin Mine, which is the largest known deposit of tin on the American continent, and perhaps in the world. This mine is unworked owing to its having been in litigation for a number of years. As your Correspondent purposes visiting this very promising part of the country, he will be able to speak more definitely on the subject of its mineral resources. It is here in the vicinity of Santa Barbara that the richest quicksilver mines are said to have been discovered lately, and a company of our principal capitalists has been formed to work them. The Reddington Quicksilver Mine produced 900 flasks during the month of September from two furnaces, being more than that produced by either the New Idria or the Almaden Mines. Notwithstanding the new discoveries, the quicksilver market is still insufficiently supplied, and the high prices are still maintained. The foreign demand cannot be supplied, and the only hope of a reduction in the price entertained by our miners is in the possibility of discoveries of mines in Queensland, or fresh developments in Mexico.

A large amount of capital is necessary to work quicksilver mines, but this does not deter sanguine people from investing somewhat recklessly. The quicksilver excitement is so great that every patch of red rock is pounced upon and declared cinnabar. As an instance of how far this ignorant infatuation will lead people, it is stated that a well-to-do miner from Idaho, on being shown a piece of rock through which a broad streak of reddish hue ran, immediately concluded that it was cinnabar. He subsequently paid $30,000 in cash for the mine from which the rock was taken, but then he discovered that he had purchased plenty of red jasper, but no cinnabar mine. The "Napu Register" of a recent date states that at the Flagstaff Mine the globules of quicksilver were discovered scattered so thickly in the loose dirt as to attract the attention of miners at work in the tunnel. A blast was immediately put in, and when the smoke cleared away quicksilver was found pouring out of the rock in a stream as big as a straw. A dipper was held under it until half full of the precious liquid. On further examination a pocket was also found near this which contained about a teacupful of quicksilver. In Austin, Nevada, a couple of men are actually engaged in clearing the city sewers for the purpose of extracting therefrom the quicksilver and amalgam which have passed down with the tailings from the Manhattan Mills above, and the daily result of their work is about 4 lbs. of quicksilver and amalgam.

Our hydraulic gravel mines are, as a rule, paying remarkably well, but when such is the case they are not put on the market; this fact should be borne in mind by British speculators. It is not all gold that glitters, and though a gravel mine may show magnificent returns in the last clean up, it is well to consider whether the clean up may not be the last, or somewhere near it. The extent of available auriferous gravel, and the permanent facilities for working it, are the two points that should never be lost sight of by those who desire safe investments in hydraulic gravel mining.

COAL MINING IN ITALY—No. III.

Observations on the Coal Mines worked by the Commendatore Ferrari-Corbelli in the Tuscan Maremma. By the Engineer Signor Constantino Haupt. Translated from the Italian by Capt. JACOB, mining engineer, author of "Yrisca Silurum," "Recollections of Rome," &c., &c.

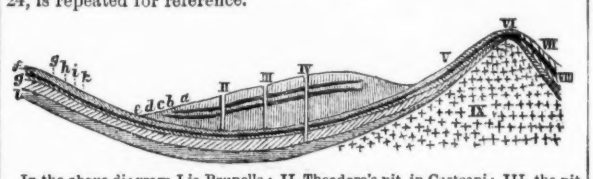
GEOLOGICAL POSITION OF THE COAL MINES.

By reference to the geological section of the soil (inserted below) in which are situated the coal mines belonging to the Commendatore Luigi Ferrari Corbelli, it will be observed that it represents two epochs of the Tertiary formation—those of the Miocene and Eocene periods. The same is covered with alluvial soil, composed of a yellowish kind of earth, and some of a hard and inflexible nature, but of little thickness, under which we come across, generally, a bank of a species of quick-sand, called here "sabbie muoventi," together with gravel, which is most pregnant with the stagnant water of the Maremma, before alluded to and explained in part II.

The Miocene strata are here complete and perfect, presenting in this place the three series, levels, or beds, the superior or upper, the middle, and the inferior or lower. On the same seat, also, lie the carboniferous stratum, of which two extremely good seams are distinctly comprehended in the first level, or series, called here "piano superiore."* There are, at least, two other seams in the lower series, or "piano inferiore," whilst the middle series, or "piano medio," is without any coal seam whatever. In the Eocenene stratum are shown (diagram below) a species of stone, called "galestro," Alberese limestone, and a species of hard grey stone, called "macigni," which not having been broken by any volcanic eruption, does not come in contact with either of the coal veins. The thickness of the Upper Miocene series, or "piano superiore," we are able to estimate at 300 metres, and that of the lower series, or "piano inferiore," at 100 metres to the rock. In general the series of the strata, when approached, are composed as follows:—

The Upper Miocene, or "Miocene Superiore."

The following diagram, published in the *Mining Journal* of Oct. 24, is repeated for reference.



In the above diagram I is Brunella; II, Theodore's pit, in Casteani; III, the pit of Follonica; IV, St. Andrea pit, Monte Massi; V, Carpella; VI, Sasso Fortino; VII, Acqua Nera; VIII, the third bed, or Acqua Nera coal (the dip of the Acqua Nera coal is south-east and west); and IX, trachytic rock.

(*a*) consists of clay, and divers strata of sandstone, called here "arenaria" and "gres;" the clay is principally of the nature here denominated "mattajone." (*b*) First seam of coal; (*c*) clay; (*d*) second coal seam (more fully described in the Journal of Oct. 24).

Middle Miocene, or "Miocene Medio."

(*a*) This consists of clay of the nature before described, with a kind of conglomerate here called "puddinga."

Lower Miocene, or "Miocene Inferiore."

(*a*) Red conglomerate (conglomerato rosso, or gonfolik); (*b*) Clay (of the nature here called mattajone); (*c*) Carboniferous limestone (calcare carbonifero); (*d*) Third stratum of coal (Acqua Nera coal); (*e*) Clay; (*f*) Fourth stratum of coal (also Acqua Nera coal); (*g*) Clay, which reposes immediately upon the Alberese limestone of the Eocene period. The clays of the Upper Miocene are plastic, they are for the most part very hard to break, and are of different colours, passing by degrees in an endless variety of shades from white to black.

In the upper stratum the two first seams of coal are locked up, and, as it were, hidden, for in this primary formation they begin and end, as may be seen by the diagram. In the immediate vicinity of these seams of coal the soil is looser, and of an easier and more workable nature than the strata above and below it. The immediate roof of these seams of coal is clay; this clay is rather of a gravelly nature, and of a clear coffee colour, and somewhat impregnated with the nature of the coal beneath. The clay which forms the bed of the first stratum of coal is also much of the same nature as that already described. In short, at the depth of 8 metres under this seam (an Italian metre being 1 yard 4 in. of English measurement) we meet with the second seam of coal, and under this again the clay assumes the same character and colour as that which has been already described, with the exception that it is of a somewhat more gritty and gravelly nature than the upper beds, and the gravelly parts are rather of a larger and coarser size. Besides which there is a seam of the species of stone, here called "puddinga," dividing the strata at this point, which are again broken through by a kind of cement formed of a mixture of a sandy kind of gravel and limestone of the Middle Miocene period.†

The strata of the Middle and Upper Miocene periods are not rich in fossil flowers nor in the remains of the different species of animals of those periods. The principal fossil leaves found in these strata are the oak, the chesnut, the beech, and the plane tree, and finally, the fern. (In the third stratum—that of Acqua Nera—many remains of an animal of the goat species are found.) No animal remains worth speaking of are found in the two first coal strata, but in the clay bed overlying the first many specimens of shells are found, principally of the species denominated *Ostrea*. In vertebratic remains these strata, as before observed, are extremely poor, and any specimens thereof are rarely found. Jaws and teeth of the species called *Gus* are occasionally found in these strata, and also the skeleton remains of tortoises. In the stratum called "puddinga," already described, we observe very numerous and very perfect remains of the different species of shell-fish called *Pleurotoma, Cerinthium*, and *Turritella*.

Passing to the Lower Miocene formation we find a very strong and hard stratum of conglomerate, called gonfolite, of which the globules are very large, and cemented together by a red gravelly substance of a very ferruginous nature; these globules are derived from the lower stratum, and are of the nature of the Alberese limestone, cemented together with red gravel, broken off into most fine fractions from the red rock called "Gabro Rosso." Under this conglomerate we find a clay of a dusky gray colour, it is very hard and compact, and is here denominated "mattajone," in which is not unfrequently found the fossil shell-fish already alluded to. The limestone and yellow soil which come next are bituminous and fetid, the latter undoubtedly on account of the stagnant water of the Maremma, with which it is saturated. This soil is in many places very tenacious and adhesive, and in many places formed and hidden in banks of little thickness. This soil is full of fossil shell-fish, and contains a multitude of the species called *Mytilus*, and various other qualities of fresh-water shells abound in it. We observe, besides, also impressions of the plants here called *Actiledoni*, and of the plants here called *Monocotiledoni*, and the impression of various coniferous remains, and in general all the Flora of the Tertiary period are here represented. The said carboniferous and bituminous limestone overlies the third or Acqua Nera seam of coal, which is the first coal vein of the Lower Miocene formation, the aforesaid calcareous stone forming the roof of the said third seam of coal. The bed of this stratum is a bank of clay, uniform with the stratum above, but somewhat less in thickness. Afterwards comes another stratum of the carboniferous limestone before described, which forms the roof of the fourth seam of coal, which is the second of the Lower Miocene formation; under this fourth seam of coal comes another stratum of clay, with a slight roof of Alberese limestone, which is again sustained by a stratum of accessory rock, as shown in the diagram, much of the ferruginous nature of that already described as being found in the Upper Miocene formation, the iron, however, being more concentrated and of less extension than that before described, and sometimes found in small strata.

Rocca Tederighi, Italy, Nov. W. J. JACOB.

[*To be continued.*]

* This statement is perfectly correct as both these seams crop out at Acqua Nera, and both are coal of prime quality. The following are two analyses of the outcrop of the first seam. The first, that of Signor V. Canda, Director of the Chemical Laboratory of the Royal Institution of Engineers, at Turin.—(1) This coal belongs to the class dry; (2) This same coal, when burnt in a vacuum, disunites itself, and leaves for fixed or settled residue a cake (not in powder); (3) It results from the three corresponding analyses that this coal is composed of the following percentages:—

Volatile combustible matter—gas	30·185
Separated sulphur	0·220
Water, ascertained by hygrometer	7·400
Fixed carbon	52·352
Cinders	9·300
Loss sustained	0·543
Total	100·000

And the second, that of W. White, Esq., analyst and consulting chemist, of 25, Finsbury-place, London, who states—"After having examined the samples of Italian coal submitted to me I am happy to state that the results are very favourable. As you inform me that the specimens are those of an outcrop, I have no hesitation in stating that at a depth coal will be obtained yielding a large percentage of gas of high illuminating power *equal* to the best yet procured in Great Britain, excepting always Cannel. The quantity and quality of coke I have only seen surpassed on one occasion.

Moisture	11·90
Fixed carbon, equal to 54·58 of coke	44·08
Mineral ash	10·50
Volatile matter	31·00
Sulphur, as sulphuretted hydrogen	0·52
Loss	2·00
Total	100·00"

I think the above is not bad for outcrop coal. If this is so good, that at a depth *must* be of excellent quality.

† "Would space permit," says the engineer, Constantino Haupt, "I should wish to enter into further details concerning the clays of the Upper Miocene period, inasmuch as they afford a great field for the cultivation and opening out of other and very important industries besides those of the coal mines in question. To the eyes of practical men these industries would be of almost equal importance to those of the coal mines themselves, especially as they could be always worked in unison with the latter, and be at all times certain of a sure market." The Tuscan Maremma affords an unlimited field for future development, and only capital, energy, and perseverance are required to make it agriculturally, as well as minerally, the most productive part of Italy. The firm of Mackenzie and Co. have now introduced their agricultural steam-engines into all the principal cities of Italy, and they are now extensively used in the Tuscan Maremma.

AUSTRALIAN TIN MINING.

SIR,—Herewith I transmit the yield of the Tin Mines for the four weeks succeeding last report; these mines seem to have dropped out of public notice here altogether, they are seldom referred to by the press, except to say that "tin mines shares" are quite out of the market. Perhaps the data I send, giving evidence of their constant yield, is of greater value to your readers than any report or opinion.

QUANTITIES OF TIN SENT FROM THE AUSTRALIAN TIN MINES FOR FOUR WEEKS ENDING SEPTEMBER 12.

		Tons	c.	qr.	lbs.	Tons	c.	qr.	lbs.
Aug. 20	Via Warwick	61	10	1	27				
27	Ditto	108	1	2	1				
Sept. 3	Ditto	108	6	1	7				
10	Ditto	70	4	0	26=	348	2	2	5
Aug. 22	Via Murrurundi	20	8	1	15				
29	Ditto	13	13	0	24				
Sept. 5	Ditto	26	1	3	17				
9	Ditto	6	4	0	0=	66	5	2	0
Aug. 17	Via Grafton	27	0	0	0				
24	Ditto	19	5	0	0				
26	Ditto	30	0	0	0				
30	Ditto	5	4	0	0				
Sept. 1	Ditto	18	6	0	0				
4	Ditto	20	0	0	0				
8	Ditto	7	14	0	0				
11	Ditto	15	12	0	0=	143	1	0	0
	Total	Tons	557	9	0	5			

Sydney, Sept. 25. C. E.

TIN MINING, AND ITS PROSPECTS.

SIR,—Whenever an obstacle presents itself we are much more likely to surmount it if we face it boldly than if we attempt to believe that it does not exist; yet, in considering the question of tin mining and its prospects, we have been too ready to ignore Australia as a permanent tin-producing country. Nothing can be more absurd than this, when it is considered that during the present year one-third of all the foreign tin brought into the market has been Australian tin; that the Australian tin has all been produced from stream workings, which cannot exist except in the vicinity of rich lodes, and this no one can know better than Cornishmen; and that the yield of Australia is rapidly approaching that of Cornwall, whilst the cost of labour in Australia has diminished more than the diminution in the price of tin. In the first ten months of the present year no less than 6200 tons of pure tin has been imported from Australia, being much more than twice the quantity (2758 tons) derived from the same source in the corresponding period of 1873, and more than 30 times the quantity sent over in 1872. The subjoined are the actual figures:—

AGGREGATE QUANTITY OF TIN BROUGHT TO MARKET BETWEEN JAN. 1 AND OCT. 31, 1874, AS COMPARED WITH TWO PRECEDING YEARS.

	1874.	1873.	1872.
British mines.....Tons	7,500	7,500	8,000
Banca sales	3,469	3,289	3,102
Billiton imported	2,348	2,029	1,965
Straits imported	3,682	4,220	6,219
Australian imported	3,126	307	16
Australian ore = tons metal	2,475	2,451	177
Total.....Tons	22,600	19,796	19,479

It is a favourable feature that the deliveries of foreign have increased considerably as compared with 1873, no less than 11,860 tons being shown for the first ten months of the present year, against 8864 in the corresponding period of the preceding year, and the position of the tin market is decidedly improving, 94*l.* 10s. cash having been paid for Straits, and 94*l.* for Australian only yesterday—fair evidence that this price is likely to be permanent being afforded by the fact that November and December shipments of Straits have been sold at 94*l.*, and that English ingots readily command 100*l.* Again, stocks are lower than at the corresponding period of last year, for it is found that the available foreign tin on Nov. 1 of the last three years was—

	1874.	1873.	1872.
Stock in London.....Tons	3018	1897	920
Banca in Holland (in second hands)	450	715	2841
Billiton in Holland	807	570	99
Actual stocks	4275	3182	3860
Straits afloat for Europe	1049	464	631
Billiton ditto	899	250	382
Australian ditto (including tin in ore)	750	839	388
Total.....Tons	6973	4735	5261

Thus, it appears that the increase of available tin has been materially less than the increase in the deliveries, and the tin-plate makers are now well employed. The importance of this will be appreciated when it is recollected that only a few weeks since a competent American authority wrote that—

"The continued depression in the tin-plate market has had a great deal to do

with the present low range of tin. A change in this respect may be brought about before long in Europe, if not in this country, for the whole world is now depending upon Great Britain for supplies of tin-plates, and production in England and Wales has been seriously checked by the prolonged strikes of the past summer."

And, moreover, expressed the opinion that—

"Should nothing of an unexpected nature occur to prevent it, the recovery already begun will probably develope into an unusual activity early in 1875, and tin may show the general improvement in proportion to the effect of an increased consumption in overcoming the depressing influence of an overstocking of the market. Should solid capitalists on the other side consider the metal unduly depressed, and find in it a good opportunity for temporary investment, it would soon recover a healthy tone, though the competition between Australia and Straits will place a check upon speculative advances in prices for a considerable time to come, if not permanently."

With the present aspect of affairs a range between 90*l.* and 100*l.* per ton for English and between 85*l.* and 95*l.* for Australian may reasonably be expected for some time, and at such prices there should be no difficulty in realising good profits from tin mining both in England and in Australia. But to secure these profits miners must not content themselves with following the old beaten path of slow working, which causes the management expenses to be so high in proportion to the working expenses that shareholders are ruined. In future we must have shaft sinking and the driving of the main levels done by machinery, and the speed of opening must be considered rather than the return of ore; all other driving and all stoping must be done by hand. By this means, although returns of ore will commence later profits will begin sooner than at present, and neither Australian nor Straits tin need cause any serious apprehension to Cornishmen. Considering, too, that Cornwall is not a new country, and, having deep mines to work, cannot be so heavily weighted with management expenses as younger districts, it would be well to consider whether the system of working mines in groups could not be introduced under one superior management, and with one large and ample plant of rock-drilling and sinking machinery instead of several comparatively small and useless ones. SHAREHOLDER.

Nov. 16.

THE NORTH WALES QUARRYMEN'S STRIKE.

SIR,—I have neither the time nor the inclination to enter into a general dissertation on Slate Quarrying in North Wales, and such was not my object in addressing to you the letter which you favoured me by inserting in the Journal of Oct. 31. I intended therein simply to point out and refer to some of the causes which gave rise to the strike at the Penrhyn quarries, and the course which had been, and was then being, pursued by all parties to the dispute. The result of the strike is now known. The policy of peace at any price has been followed, and no matter what the opinions and convictions of other quarry proprietors on the course pursued may be, comment can do no good, and I shall not indulge in any, though I cannot allow the letter of "An Observer" to remain unnoticed.

There are some propositions so well accredited as to command universal approval; to assert them is sufficient, and to enter into a detailed explanation of the why and the wherefore is a mere waste of time and words.

When I addressed you in my former letter I was under the impression that every person professing the slightest and most superficial knowledge of slate quarrying in North Wales was well aware of the marked difference between the slate formation of Festiniog and in Carnarvonshire, but I now find that I was mistaken, for it appears that there is one solitary individual, your correspondent, who dates his letter from Festiniog, and writes under the signature of "An Observer," who has never yet been able to discover any other difference than in colour—that "the Carnarvonshire slate is red, purple, and green, and the Merionethshire slate blue," and that "the dip, too, is different, being in the former county nearly vertical, whilst in Merionethshire it varies from 5° to 80°, or thereabout;" but he maintains that there is no variation in the quality or character of the slate itself, or in the mode of working or getting it, and he assures us "that if a man has been brought up a quarryman at the Festiniog quarries he can understand the character of the slate rock in Carnarvonshire or any other part of the world." "An Observer" is evidently himself a Festiniog quarryman, and desires to sound his own trumpet, but, notwithstanding his exalted notion of his own judgment in the matter, I should be sorry to have it supposed that I concurred in his opinions, and hence the necessity for my reply.

In my former letter I pointed out that the referee in the Penrhyn dispute did not profess to know anything of the practical working of a slate quarry, and that the experience of the gentleman who had been called in to assist and advise with him on those points where a practical quarryman's opinion might be required was confined to "the Merionethshire quarries, which contain slate of a totally different character, and are worked in a very different way to the Carnarvonshire slate quarries, to understand the working and setting of bargains in which requires a long apprenticeship of practical experience." "An Observer" objects to such of these statements as are contained between inverted commas, and he, in effect, says—1. That the Festiniog quarries do not contain slate of a different quality, and are not worked in a different way from the Carnarvonshire slate quarries.—2. To understand the working and setting of bargains in Carnarvonshire slate quarries does not require any practical experience in connection with those quarries. In answer to the first of these propositions, I have only to say that the slate in the Festiniog quarries is well known to be of surpassing quality as regards purity of metal—it lies in one solid, compact mass several yards wide, without foot-joints or bastard or bad rock intervening, and is all of one character, the cleavage or split being unequalled by any slate-rock in the world, while the slates produced are practically all best slates—a very trifling or nominal quantity of seconds only being produced, and the waste or refuse arising from the making of slates is trifling as compared with the quantity of slates produced. In the Carnarvonshire quarries, on the other hand, the cleavage is very uncertain, and varies considerably; the rock also varies in almost every bargain—some soft, some hard, foot-joints constantly occur at various distances, often so closely together as to render it impossible to make any slates therefrom, and at other times at distances much greater than necessary to enable the quarryman to make one length of slate therefrom, and yet not distant enough to enable him to make two. Again, the best rock is constantly interspersed with rock of a very inferior quality, while some rock in the same bargain will produce best slates, some seconds, and some thirds, the proportion of best slates being in many cases about one-third only of the whole, and the quantity of debris arising from the different qualities of the slate varying considerably, but in every case very greatly exceeding the quantity arising from Festiniog slate. Again, the working of the slate in the two localities is very different. A slab of slate metal 6 feet or 7 feet long from the Festiniog veins will split from top to bottom without difficulty, and in most of the quarries, and notably in Major Mathew's, will not cross-cut. In the Carnarvonshire quarries, on the other hand, a slab of the same length must be cross-cut, and split into two or three sections, before it can be split into slates. Some of your readers may, perhaps, recollect having seen the wonderfully thin and fine large specimens of Festiniog slate which were shown at the International Exhibitions of 1851 and 1862. Such specimens, or anything approaching to them, never have been, and never can be, produced from any quarry in Carnarvonshire.

The second point made by "An Observer" is in effect answered by what I have already said, and I must leave the public to judge between us. "An Observer" contends that the knowledge of Festiniog rock is all that is required to enable him to set bargains in Carnarvonshire quarries, and this I deny. I well know from my own practical experience, and in this I shall be confirmed by every quarry proprietor and manager in Carnarvonshire, how difficult it is to set bargains satisfactorily, the best quarrymen who have been working on the rock being themselves frequently deceived, and to arrive at anything like a correct conclusion it is absolutely necessary not only carefully to inspect the rock, and consider its apparent quality and capability of yielding any given quantity of slates, but to consider also the character of the foot-joints and slants, the labour necessary to get down the rock, and the quantity of bad rock which may intervene and have to be removed, and other practical difficulties, the best guide to which will be found from careful observance of what has been done on the same and the adjoining bargains during the previous month. I could add more, but I have, perhaps, said enough to satisfy everyone but "An Observer," and I cannot hope to convince him. He concludes as follows—"'A Quarry Proprietor' is wrong, then, and I shall prove him to be so from his own lips." As I read this I wondered what was coming, and wherein I had so far committed myself, but was soon relieved by finding that it was "An Observer's" logic only that was at fault, and that my supposed conviction from my "own lips" arose from nothing I had either written or spoken, but was simply the fancy of his wild imagination. He says I admitted that Mr. John Francis was "more experienced than any other quarry manager in the county, but, certainly, much more experienced than" myself. I have read carefully through my letter, and cannot find any such statement, or anything to warrant it, but, while I say so, I also confess that Mr. Francis has had much greater experience than I have ever had, and I freely admit his superior judgment in all matters relating to slate quarrying, and certainly in the setting of bargains in Carnarvonshire slate rock, though I, nevertheless, fancy that I do know somewhat more on that head than "An Observer," but, high as my opinion is of Mr. Francis, and knowing as I well do the great estimation in which he is generally held, yet it is not for me to pass judgment on others, and say that everyone else is his inferior, and I have never said so. Let me, however, pursue this conviction out of my "own lips." It appears that I have said nothing and written nothing wherein I have admitted I had formed any "wrong" opinion, but the statement is that Mr. John Francis went to "Mr. R. Owen, the able, the energetic, and the successful manager of the Welsh Slate Quarry," and asked him to examine the settings the men complained of. And what if he did?

I really for the life of me cannot see what this has to do with me. I am not answerable for what Mr. Francis may have done, I have never mentioned Mr. Owen's name before, and have nothing to do with him; but "An Observer" concludes "further comment is superfluous." I think so too; and yet, I must add a few words more. Mr. Owen was not referred to in my previous letter, but I know him well by repute, and I fully concur in the above description of him, and I know also that his experience has not been confined to the Festiniog quarries, but that he has had long experience in the working of Carnarvonshire quarries. A better person to consult and advise on the setting of the bargains could not be found, and why, then, was his testimony rejected?

It is generally understood, however, that Mr. Francis did not seek to have the correctness of his own judgment confirmed by Mr. Owen alone, but also by that of another gentleman of great experience as a Carnarvonshire quarry manager, and that the referee refused to receive the evidence of either of these gentlemen, and preferred acting on his own and Major Mathew's opinion; and, further, that when he and Major Mathew went to inspect the bargains they were accompanied by the quarrymen, but declined to allow Mr. Francis and the other agents to be present; and, moreover, that they themselves never, in fact, inspected the first bargain referred to in Mr. Wyatt's award, and on which he commented at the greatest length, making it the standard example on which his award chiefly rested.

One word further, I do not wish it for one instant to be understood that I consider all Festiniog quarry proprietors to be incapable of forming a sound opinion, and giving excellent advice on the working of Carnarvonshire quarries. I know that some of them, Messrs. Holland and Greaves for instance, have had great experience in Carnarvonshire quarries, and their judgment might be most confidently relied on; but to say that a quarryman, whose experience has been confined to Festiniog, and who has never had anything to do with the working of Carnarvonshire quarries, can, in consequence of such limited experience, be capable of forming a sound and reliable opinion on the capabilities and mode of working the Penrhyn quarries, and the setting of bargains therein, is too absurd to be listened to, and no one but a blind partisan could assert, or a perfect ignoramus belive, it. A QUARRY PROPRIETOR.

Nantlle, Carnarvon, Nov. 18.

NEGLIGENCE OF COLLIERY MANAGERS.

SIR,—The decision given in the case of Howells *v.* the Landore Siemens Steel Company is really a disastrous one for working colliers, and proves that the delegates who watched their interests during the progress of the present Coal Mines Regulation Act through the Houses of Parliament made a great and unalterable mistake in advocating the compulsory appointment of certificated managers, since all responsibility is removed from the colliery owner, and placed upon a fellow-servant, from whom no damages for negligence are recoverable. William Howells, a miner, employed at the Worcester Colliery, near Swansea, was killed by explosion on Aug. 26, 1873, and at the Glamorgan Assizes in July an action was brought on behalf of the widow and child against the company, when it was shown that Benjamin Thomas, as manager of the mine, had been guilty of negligence in regard to the ventilation, and the jury gave damages—100*l.* for Mrs. Howells and 50*l.* for the child—which, however, the learned Judge stopped by holding that the old doctrine, vice-principal, had been entirely destroyed by a decision in the House of Lords, and that Thomas was only a fellow-servant, although in a superior grade to the deceased man. Mr. Field, Q.C., on behalf of the widow, urged that, whilst he was willing to accept the case in the House of Lords, which decided against damages being got for injuries through the negligence of a fellow-servant, still he hoped to show that the Mines Regulation Act put the manager of a mine in a position other than that of a common fellow-servant. The Act provides—"That every mine to which the Act shall apply shall be under the control and daily supervision of a manager; and the owner or agent of every such mine shall nominate himself, or some other person not being a contractor or getter of the mineral, or the person in the employ of such contractor, to be the manager of such mine, and shall send a written notice to the Inspector of the district of the name and address of such manager." And then it went to say that the manager must be certificated.

Now, I am sure all colliers believed that the manager was the representative of the master, and not a fellow-servant; and I think if the spirit of the Act is taken instead of the letter it will be admitted that Mr. Field was right in arguing that the status of a certificated manager was that of a representative of the owner, and not a fellow-servant with the men under him. He further contended that, under the Act, the manager was in point of fact a principal, acting, not as equal of the master, but in his own right as manager, and that he was, therefore, brought into the exceptions of a fellow-servant. The learned counsel argued his point with considerable ability and persistence; but the rule was refused, and the point in dispute was settled in favour of the company—although from the danger which such a decision involves no doubt something will have to be done to prevent the injustice inflicted upon the widows and children of colliers killed through managers' negligence.

It was explained by one of the Judges to be a general rule of law that the master who employs a servant to do anything is responsible for the negligence of that servant every day that he is in his employ, and sometimes that operates very harshly on the master, but still the rule of law follows. But to that there is no exception: that it is to be considered part of the bargain between the master and servant that the latter shall take upon him all the ordinary risks of his employment; that he considers that in taking the wages he runs the risk, and cannot come upon the master for damages. He stipulates for certain risks when he takes the wages; and one of those ordinary risks is to be considered the risk that his fellow-servant shall be negligent, and he cannot recover for any mischief arising from the negligence of the fellow-servant. Where the master is personally to blame the thing does not apply. Now, here the person Thomas, whose negligence was alleged to be the cause of the accident, was appointed as manager of this mine under the recent Mines Inspection Act. It was essential for the plaintiff's case to make out that he was a servant of the defendants. If he were not a servant then they would not be responsible for his negligence. But, continued his Lordship, I think it is proved he is their servant. The next point taken in construing the statute was that he was a fellow-servant; he was not such a fellow-servant that his negligence fell upon the general rule. There have been several dicta quoted about a sort of superior servant—a vice-principal, and an *alter ego;* and it may be worth considering whether a person in that position would avail the plaintiffs at all. I do not know of any case where it has been held in favour of the plaintiffs' view. In Scotland the point was actually raised, and decided in the Courts below, that a man being a vice-principal was still within the exception of the liability of a fellow-servant. Then came a decision in the House of Lords—not, perhaps, an absolute decision—but a ground for holding that the supposed limitation of the exception of the liability of the master does not exist. If that be so it follows at once that the exception does not apply in the present case. If it be not so the plaintiff must go to the Court of Error, and show that we have misapprehended the House of Lords in that view of the matter.

As there can be no question that this is the law, since four of the most celebrated judges state it to be so, some other means of protecting the lives of the working colliers and the interests of their widows and children must be looked for. To bring an action for damages against a manager would often be useless; we must, therefore, endeavour to get the law altered, or else, by enforcing the 32nd clause of the Act, which provides that when a certificated manager has been convicted of an offence against the Act the Secretary of State may order an enquiry—the trial, in fact, of the manager—before a County Court Judge, stipendiary, or other person, into the conduct of such manager, and the Judge or Court has power to suspend or cancel the certificate, and the cancellation or suspension must be recorded in the register of holders of certificates. It is, of course, to be regretted that widows and orphans cannot henceforth obtain pecuniary compensation in case of husbands and fathers being sacrified by accidents resulting from neglect, yet I think that, so far as general safety is concerned, the practice, which should be at once commenced, of proceeding for the suspension of the manager's certificate instead of going for damages would be quite as effective.

Nov. 16. COLLIER.

GENERAL OBSERVATIONS ON MINING.

SIR,—From what is transpiring from time to time one would scarcely think that mining was an industry indispensable to the advancement of the arts, science, and commerce, and conducive alike to the wealth and well-being of the most highly cultivated nations. In general terms its value and importance are admitted, whilst in individual cases it seems to be utterly lost sight of. There is a commerce or traffic in mining artificially promoted, wholly irrespective of the intrinsic worth of the objects in respect of which it is exercised, and which sometimes fatally retards the progress, and renders impossible the profitable working of what would otherwise be lucrative undertakings.

Whatever may be said about the hazardous nature of metallic mining, there cannot be the least doubt entertained by those most familiar with its phenomena but that this view is largely exaggerated, probably owing to reckless speculative commercial proceedings. There is really not so much risk in the prosecution of this industry as is generally attributed to it. It is sometimes very convenient for persons to refer the consequences of their own acts to the changeable nature of things, and to affirm when overtaken by reverses that they were the outcome of inevitable circumstances which no one could foresee, and, therefore, not subject to human control. The term "mining," as is well known, is applied to a variety of operations, but in this letter its use will be restricted to metallic mining according to its common acceptation.

The hidden resources of metalliferous minerals, and the little which is known respecting the laws of their formation and distribution render it absolutely necessary, in the practical departments of mining, to exercise an amount of observation, circumspection, and prudence as is scarcely required in any other industrial pursuit, but when to this is added the comparatively large sum of money which is necessary for even experimental purposes, it must be evident to everyone who will take the trouble to reflect on it that a penetrating, comprehensive, and well-formed judgment are cardinal qualities in directing its manifold operations with efficiency and economy.

Whatever may be said by those on whom a reverse of fortune visits the penalty of disappointment from losses sustained or losses apprehended, none but the practically experienced know how they originated, or how they might have been avoided, and even they do not always make the discovery in time to reverse the consequences. In mining, like many other pursuits, wisdom not unfrequently comes too late to redress detected errors, but the experience by which it is acquired may be useful to prevent similar occurrences in all future undertakings. There is a penetrating power of the mind—at least it appears so to me—which transcends the range of vision, but whether intuitive or acquired I would not undertake to determine, but if the latter, then the faculty must be pro-existent, and rendered sensibly active by facts of observation and experimental science communicated to it, by which operation and with such materials the otherwise unseen is mirrored in dim but distinct outline, and a prescient power seems to be thereby inaugurated, which gives to the mind views wholly distinct from those of the eye, or, rather, transcending its expanse, and an abstract power of minutely exploring complicated objects beyond its range. This may be termed fancy, but fancy uninformed by experience does not often lead to useful practical attainments, whilst the "I think" of the miner, which enbraces both his conviction and conclusion, independent of any conscious logical formula, not unfrequently does. I attribute it to a mental perceptive faculty aroused into activity by the presence of facts of experience and observation, and giving rise, if I may so say, to another sense of the utmost value and importance in mining.

One reason why mines are not more remuneratively worked is that too much is confined to the conventionalities of routine, and too little to the province of the intellect. It is the *ne plus ultra* of some men to do as their fathers did, or as some other persons do, instead of exercising an independent judgment, and adapting means to ends according to the different nature of the objects and the peculiar condition of attendant circumstances. Any attempt to construct parallels where no true parallelism exists is certain to result in obliquity. The order of venous formation differs in different districts, and in some instances mines in the same district differ just as widely, especially with regard to the proper manner of working them. The displacement of lodes, which is occasioned by a variety of causes, is very often a fertile source of embarrassment in mining, notwithstanding that these identical occurrences are fruitful instrumental causes of the productiveness of lodes. So that the means which nature employs for the concentration of metalic ores is regarded as an intervention by which they were broken and scattered. Theoretical science has pretended to overcome this difficulty, and fondly flattered itself that it had done so, by the contrivance of a more mechanical device on paper, whose index, when appealed to, is always found pointing to the greater angle, and hence is not only of no value, but dangerously misleading. Scientific formulas, so far as my knowledge extends, affords but little aid to the miner in this intrinsic department of mining; his best guide is secured by close intelligent observation, and judicious comparisons. The proximate, or instrumental, causes which operate to the displacement of lodes are found to differ widely from one another, not only in their nature, but as to the sources whence they originated, and the effects which they produce both on the lodes and rocks subjected to their agency, but a critical investigation of these for the purpose of ascertaining their ultimate effects, or of tracing them to their original source of power and motion, would lead to a more protracted discussion than I am at present inclined to enter into. Mining, in the sense to which I have restricted it in this letter, is that multifarious proceeds by which the ores of commerce are taken from their original receptacles, and prepared for chemical conversion into the useful metals. A knowledge of the localities in which ores abound is the property of man, others besides those engaged in mining, and require no skill in attaining, whilst the form, quantity, and value in which they occur are facts which experimental mining can alone determine. It, therefore, must be obvious that if the exploratory operations of a mine be for the purpose of disclosing its hidden features, and revealing the relation in which the different phenomena stand to and affect each other, that two much attention cannot be given to this part of mining, nor too much care taken to retain a knowledge of

the facts observed during the varied exploratory processes had recourse to.—*Llanrwst, Nov.* 17. ROBT. KNAPP.

MINING ENTERPRISE, AND MR. HENRY SEWELL.

SIR,—Referring to an advertisement by Mr. George Attwood in last week's Journal, Mr. Henry Sewell is expected in England this week, and will, no doubt, be prepared to answer for himself; but, as the name of Bennett is mentioned, in order that there should be no misconception, I have to state that such reference is not to myself, but, I suppose, must be to a solicitor of that name practising in Salt Lake City. Will you be good enough to publish this?

New Broad-street, Nov. 18. FREDK. BENNETT.

EBERHARDT AND AURORA MINING COMPANY.

SIR,—I have just received the report and accounts of this company, and was struck at finding one of the committee appointed at the general meeting in September last "to select directors on our behalf" should have used that power to nominate and appoint himself; very probably he will prove an efficient director, but I think some explanation is due to us, and I ask—Is it customary, seemly, or courteous to use the power delegated to him for one purpose, and wield it for his own benefit and aggrandisement, particularly as I do not find one of those whose names were submitted to the meeting chosen, except Mr. Applegarth, whose usefulness had not been ignored. I have also heard that one of the gentlemen selected was not even a shareholder at the time of his nomination, although, I presume, he has since qualified himself for the office.

These facts do not impress one very favourably with regard to the powers delegated to committees. The new directors seem to keep a watchful eye upon their own interests, as one of their first acts is to submit a resolution "to confirm the appointment of directors, and to fix their remuneration." I thought we were to have such an exemplary board that the latter would be their least consideration—their primary object to pay us dividends, and, when that feat was accomplished, leave us to remunerate them accordingly. They might surely trust to us, for shareholders are never backward in rewarding those who have served them faithfully, and increased the value of their property. I throw out these hints in your widely circulated Journal, as absence on the Continent will prevent me from attending the meeting.—*Nov.* 18. J. S.

CEDAR CREEK GOLD MINING COMPANY.

SIR,—I have perused with interest the report of our meeting which appeared in your Journal of last week. The results of the last fiscal year are somewhat disappointing, and I think it would have been much more satisfactory had our Chairman entered more fully into details, and pointed out the precise causes which had so adversely operated against the realisation of profitable results. I feel perfectly satisfied the success of the future is assured, and that the ensuing season will prove beyond doubt that our property is equal to any in California; but had Mr. Chadbourn, who appears to know our property well, given us some detailed information as to its history and producing capabilities it could not fail to have produced a most salutary effect, and increased the confidence of the shareholders in financially co-operating with our directors; the same result, however, will be attained were that gentleman to communicate the information through the medium of your columns. I may probably be told that this was furnished at the formation of the company, but no doubt since then the whole constituency has been changed, and to them such facts would be most acceptable. Personally, I should like to know if any estimate has been made as to the maximum yield of gold during one average water season, as well as the results that may be looked for from the gold, and also from the water.—*Nov.* 17. A SHAREHOLDER.

FLAGSTAFF SILVER MINING COMPANY.

SIR,—Why are we kept so long in the dark? Our present Chairman, Mr. Tweed, promised to keep us fully advised of the progress making in the endeavour to recover possession of our property, but nothing whatever has been communicated since the last momentous meeting, when we were told of the departure of Mr. Erwin Davis for America. Surely our directors are not acting supinely in the present critical condition of the company. At the last meeting we heard that immediate action would be taken, but as far as we know we are still in the same unpleasant dilemma of being without any property, and the company under heavy financial liabilities. It was intimated at the last meeting that in order to enable the board to commence legal proceedings it would be necessary to raise money by the issue of debentures; as this has not been done one is led to the conclusion that no such step has been taken.

The rumours freely circulated as to the unfavourable condition and prospects of the mine increase the already wide-spread uneasiness, and the idea is gaining ground that the directors do not deem it prudent to recommend the raising of capital, but simply to leave the property in the hands of Mr. Erwin Davis, to be dealt with as he thinks fit. If the property is in the discouraging condition represented, such a course is unquestionably the most judicious one to adopt, for it would only be adding to the chapter of misfortunes if we were to subscribe additional capital for legal proceedings, and, if successfully expended, find that the property was not worth the outlay.

The board may not possibly be in a position to officially inform us as to the actual state of the mine, for they can scarcely be supposed to give any credence to anything that Mr. Patrick may communicate as the mouthpiece of Mr. Davis, but it is their obvious duty to acquaint us as to what course they intend to pursue. They may urge that they are in a condition of utter helplessness; if so, why are we not called together to consider the most expedient course to be adopted?—*Nov.* 19. A COUNTRY SHAREHOLDER.

RICHMOND CONSOLIDATED—EUREKA CONSOLIDATED.

SIR,—As a shareholder in the Richmond Company, I have read with interest your opportune remarks in last week's Journal concerning these two mines, and the statistical facts given certainly deserve attention. One is naturally prompted to enquire the reason why the Eureka Consolidated Company, with a profit-yielding capacity equal to that of Richmond, should be selling on the San Francisco Stock Exchange for an aggregate total of 120,000*l.*, while the Richmond Company, taking the mean price at 7*l.* per share, is selling upon the London Stock Exchange for 378,000*l.*, or more than three times that of Eureka. It would be interesting to know upon what principle the American mining public estimate the investing value of mines, and whether English shareholders do not purchase at prices far too high to enable them to obtain an equivalent return in view of the uncertain character of the investment. Our directors candidly enough tell us that the returns have reached a maximum with the present furnace-power, and there is, I fear, some evidence of weakness in our financial position now as compared with what it was last year. For instance, the autumn dividend last year was 7s. 6d. per share; it is now 5s. Last year the directors were able to pay the larger amount of 7s. 6d. per share on Oct. 13; this year the smaller amount cannot be paid until Dec. 14. Last year the amount carried forward was 19,667*l.*; this year only 5135*l.*

These are facts worthy serious consideration—that is, for those purchasing shares at the current premium in the market. Original shareholders, or those who, like myself, acquired an interest somewhere in the neighbourhood of par, have reason to be satisfied with our purchase; but it is altogether a different thing with those who are induced to purchase at inflated prices, and who are always foremost in blaming directors when impossible results are not realised.

In this respect the public are much to blame, and directors as much to be pitied; the former often purchase at unduly high, and in many cases artificial, premiums, and yet expect a substantial return upon their investment; the result of their own imprudence is made the occasion to visit vengeance upon the harmless directors. I should deeply regret to find this the case in the Richmond Company; but I much fear it will be so if the outside public are led away by the devices of professional operators, for which the directors are in no way responsible, nor can they in any manner control or prevent. It is the more necessary to exercise caution just now upon the approach of the winter season, when returns fall off and quotations decline.

These questions do not affect original holders, but those only who almost invariably sow the seeds of discontent and disunion in nearly every company, and mar its otherwise successful career.

Nov. 18. A SHAREHOLDER.

TECOMA SILVER MINING COMPANY.

SIR,—In your report of the statement made by the company's solicitor at the meeting of the shareholders of this company, I observe that an opinion is expressed that the purchase of the Truckee furnaces was a great mistake, and I, therefore, wish to give you my reasons for effecting such purchase on behalf of the company, as I believe it will be very satisfactory to many of your readers to have an explanation afforded to them.

It was always my intention, in regard to the Tecoma Company, to send all the bullion produced to Liverpool for sale, making drafts upon the company from time to time for all outgoings in America; and if I had been permitted to carry out my views in this and other matters it would have been for the benefit of the company.

The following figures will show you the main reasons why Truckee was selected by me in preference to Tecoma for carrying on smelting operations; but, in addition to these, there are the facts of being able to purchase a variety of ores for smelting all along the railroad from Tecoma to Truckee, and the inexhaustible local supply of charcoal at Truckee, together with cheap labour and cheap freights to England:—

RELATIVE COST OF SMELTING AND FREIGHT ON ORE.

Truckee.		Tecoma.	
Freight, mine to railroad station..	$ 5·00	Freight, mine to furnace	$ 5·00
,, railroad station to Truckee	7·00	90 bushels charcoal, at 26 c.	23·40
90 bushels of charcoal, at 12 c.....	10·80	Wages, materials, &c.....	7·50
Wages (Chinamen), materials, &c.	3·50	Sundries	1·50
Sundries	1·50		
Per ton of ore	$27·80		
Difference per ton in favour of smelting at Truckee	9·60		
Total	$37·40	Cost of smelting at Tecoma.	$37·40

RELATIVE POSITION IN REGARD TO FREIGHT ON BULLION.

Truckee.		Tecoma.	
Freight, Truckee to San Francisco, per ton of bullion	$ 5·00	Freight to Ogden	$ 8·00
Freight, San Francisco to Liverpool (maximum)	15·00	,, Ogden to Omaha	28·00
Sundry expenses (say)	5·00	Sundries ..... (I cannot say what this item amounts to at present.)	—
Total	$25·00		
Difference in freight per ton of bullion smelting at Truckee and shipping to Liverpool	11·00		
Total	$36·00	Total	$36·00

In the following statement bullion is taken as carrying 100 ozs. silver only to the ton of 2000 lbs.; every unit of silver above this assumed standard would increase the ratio of excess of difference on smelting at Truckee instead of at Tecoma.

PRODUCE AND RETURNING CHARGES.

Omaha.		Liverpool.	
1994 lb. — 199 lb. = 1795 lb., at 6 c.	$107·70	1994 lb. net weight, at 5c.	$ 99·70
100 oz. — 5 oz. = 95 oz. silver, at $1·29	$122·82	100 oz. — 5 oz. = 95 oz. silver	$122·82
Dedt. returning charges 22·50=	100·32	Dedt. returning charges 15·00=	107·82
		Loss per ton at these prices* on sale at Liverpool	·50
Total	$208·02	Total	$208·02

* N.B.—The price of lead at Omaha is at present only 5 c. per lb.

GENERAL RESULT.

1.—Gain on smelting ORE in favour of Truckee as against Tecoma, on (say) 3 tons of ore, at above shown saving of $9·60 per ton, 3 tons of ore being assumed to make 1 ton of bullion	$28·80
2.—Gain on freight of each ton of bullion made at Truckee, and sent to England.....	11·00
Total	$39·80
3.—Loss on sale of produce at Liverpool, as above	·50
4.—Net gain per ton on every ton of bullion made at Truckee, in preference to smelting at Tecoma	$39·30

Irrespective of the saving of cost in remittances to England, which forms quite a large item, the above sum of $39·30 per ton is in itself equal to a dividend of nearly 4*l.* per cent. upon the whole capital of the company (300,000*l.*), assuming that only 5 tons of bullion per day were produced for 300 days in the year. The Flagstaff Company is producing six times this amount from ores purchased in the Cottonwood and Bingham districts, together with their own ores mixed; and there is no reason why a like amount of bullion should not be made at the Truckee establishment from purchased ores alone, even in the event of the group of mines belonging to the company becoming exhausted, a contingency which it is perfectly ridiculous to be supposed or expected by any person acquainted with the mines and district.

I have never once doubted the advantages to be derived by the acquisition of the Truckee furnaces and property and the arrangements connected therewith; but it is quite to be expected that a lively competition exists on the part of persons interested in getting bullion shipped eastward and dealt with in America, and who would expend a great amount of talk in inducing gentlemen to believe that it was a bad thing to do to ship the bullion to England, and a grave mistake to purchase the property at Truckee. Not looking closely at the matter, the distance and gradients would appear to be great drawbacks, but in reality it is not so. The gradients are for the consideration of the railway company. The amount of freight and the cost of materials are the real points at issue, and the position in regard to these will be best understood by a reference to the foregoing figures. N. M. MAXWELL.

Nov. 18.

WHAT IS ELECTRICITY?

SIR,—I can hardly reconcile the statement of Mr. R. J. Crickmer in the Supplement of last week's Journal that they are mistaken who think that water consists of hydrogen and oxygen with the hitherto acknowledged and easily demonstrable fact, as shown by Professor Frankland in the *Mining Journal* of the 14th inst., and by every tyro in chemistry, both by analysis and synthesis, that pure water consists exclusively of hydrogen and oxygen in the ratio of 2 of hydrogen to 1 of oxygen. One cannot but admire the frankness and willingness of Mr. Crickmer to demonstrate his theory by experiment, and which very many of your readers will impatiently wait for in your next issue. EDWARD SKEWIS.

BLOCHAIRN IRON COMPANY.

SIR,—The well-timed remarks in last week's Journal induce me to say a few words on this unfortunate matter. Having received a private letter from Messrs. Chadwick, assuring me of the *bona fides* of the scheme, it having been valued under their own instructions, I was induced, as doubtless many others were, to take shares. Seeing that the company was bankrupt within eleven months after the property had been taken over, the shareholders, I consider, have a right to ask Messrs. Chadwick upon what grounds they invited and urged their friends to take shares, when at the very time they did so, from subsequent results, it would seem that the affair must have been rotten at the core. As one of the unfortunate shareholders, I think, under these circumstances, that I am justified in asking the above question; and, as having been indefatigable promoters of this undertaking, I also think Messrs. Chadwick, in justice to themselves, if not to the deluded shareholders, are bound to answer the question.

Then as to the directors, four of whom out of the six I see are liquidators, I find that in their original prospectus they propose to raise a capital of 600,000*l.* Failing to raise more than 399,750*l.*, will it be believed that they attempted to float the company for the time, paying to the vendors 313,828*l.* as was originally agreed, upon a capital of 600,000*l.*, thus leaving only 85,928*l.* for working capital and stocks, instead of 200,000*l.*, as was originally calculated. This being so, the question arises how far the directors are responsible for results, they having, while calculating for outsiders, placed the capital at 600,000*l.*, but, when calculating for the vendors, and possibly others, floated the company upon a capital of 400,000*l.*

It needs no ghost from the other world to tell all honest men what, under these circumstances, must be the result. A wind-up was inevitable. Then, as to the liquidators, who are they who fill this honourable post? Why, four of the directors of the late company, holding, be it observed, some 12,000*l.* out of a capital, as originally proposed, of 600,000*l.*

While calling upon my unfortunate brother shareholders to come forward, and so help to clear up this mysterious mystery, I cannot do better than quote your own emphatic words—"Since the suspension two of the Messrs. Hannay have been laid in their graves, but they had their coadjutors, who should not be permitted to escape by assuming the disguise of liquidators."

A SHAREHOLDER.

MELINDUR VALLEY MINE.

SIR,—We do not know your correspondent "J. T." who wrote in last week's Journal upon this mine, but the perusal of his letter has afforded us satisfaction, as it probably has also done to those of the shareholders who have read it. We have for some days been aware that important changes were taking place in the lower level of the mine, and particularly in the cross-cut now being driven to intersect the Old Cwm Erfin lode, but we did not know that the lode was so rich as your correspondent describes, although we are exceedingly glad to hear so good an account of it from one who is resident in the locality, and who has not any pecuniary interest in the company. We believe that an official report upon the mine will be published in the Journal this week. It may not be out of place for us to say that but for our prompt action this property would probably have remained idle until the present time.

At our request, some of our clients inspected the mine with us a few months ago, and so satisfied were they with its appearance that capital was provided in a few days, and vigorous operations commenced, the result of which your correspondent sketches out, but omits to say that the company has already sold a fine parcel of ore. This is without doubt exceedingly good progress made in so short a period. There are, also, large heaps of ore now at surface ready for dressing, which will yield well directly the new crushing machinery is erected.

The public and our clients know by this time that it is our practice to avail ourselves, whenever we have the opportunity, of the faint-hearted or short-sighted policy of others who (as in the case of the former workers of Melindur Valley) when seeing success within their grasp had not the courage to spend a little more money. In the present instance we believe our proprietors will profit very largely by the heavy expenditure incurred by their predecessors. The capital of the Melindur Company is moderate, and instead of being spent in searching for the lodes and erecting buildings and machinery at surface, is being used to take advantage of the development of former owners, and hence the sale of ore at so early a period. We quite agree with "J. T." that the proper system of working mines in this district is to sink the shaft as quickly as possible, and drive levels at favourable depths, and not to rely upon shallow workings for continuous returns; and we are confident that if this sound policy is persisted in upon well-selected properties failure will seldom or never result.

We are glad to find that new capital is now being introduced for working mines in the Cardiganshire district, as there are plenty of them in this and the neighbouring county—Montgomery—which are as yet only partially developed by surface scratchings, and which, if judiciously and vigorously worked, will pay handsomely. If one-half of the money that has of late years been subscribed for American silver mining schemes had been expended upon this rich metalliferous district, we venture to say that immense profits would have resulted.—*Lombard-street, Nov.* 19. H. HALFORD AND CO.

CWM SHOP—WEST CWM ERFIN—MELINDUR VALLEY.

SIR,—Seeing a letter, signed "J. T.," in the Supplement of last week's Journal, and the writer stating that he lives in the locality, I am rather doubtful as to the truth of such a statement. If so, however, I beg to inform him and your readers that Cwm Shop was never worked under the title of West Cwm Erfin; and it is now being worked by a different company than Melindur Valley, under the title of West Goginan. West Cwm Erfin and Melindur Valley are the same. As to the rest of the contents of the letter of "J. T.," I will only name the Lisburne Mines—the Level Fawr, Frongoch, Glog Fach, Glog Fawr, &c., which were all brought into a state of profit with a working capital of 2500*l.*; Goginan with a capital of 500*l.*, and a few hundreds only for the old Cwmystwith, showing the absurdity of having 20,000*l.* as working capital in this county, where in eight cases out of ten rich courses of ore are found and worked away from the very surface.

For the sake of not allowing such statements to pass uncontradicted, and in justice to the mines in this county, I have forwarded you these facts.

VAN CONSOLS.—I am glad I have a supporter in my opinion as to this mine in "Observer." ABSALOM FRANCIS.

Goginan, Nov. 17.

MINING IN CARDIGANSHIRE—THE RHEIDOL VALLEY.

SIR,—In my letter last week, giving a few particulars of the Tyllwydd Mines, I promised to furnish a brief description of some of the mines in this valley; and, beginning with the Gothic Mine, which lies opposite the Tyllwyd, and is supposed to be on the same vein, very little has been done during the past twelve months. The machinery for pumping, driving, and crushing is erected on the mine, which has produced lead ore enough to about meet costs, but it has never had a fair trial, and it will take about 4000*l.* to do so; this I consider it is worthy of.

Since I wrote my last on Tyllwyd the bargains have greatly improved, and are now producing large quantities of ore. The next mine to the east, and which adjoins Tyllwyd, is the Gelli-rei-rin, worked from surface to the deep adit level, a depth of about 80 fms., on one continuous course of ore. This course of ore has been one of the richest worked in the valley, and produced very many thousands of tons of lead ore; but although this is the case the course of ore was never followed under the adit referred to, which is not as deep as the bed of the river by 20 fms., where the great deposits of ore it is reasonably expected will be found. A capital of 3000*l.* is ample for all purposes, and would unquestionably bring this into a profitable state, and would pay more than 100*l.* per cent. per annum on the outlay It is a great pity for all concerned to see such a property standing idle, and it is to be hoped that some parties will soon take it in hand, who will do that justice in developing it which it so richly deserves.

We next come to the South Bwadrain Mine, about one mile higher up the valley, and to the east of Tyllwyd and Gelli-rei-rin, all of which are situated on the north side of the river. During the past twelve months operations have been carried on briskly, and a new 30-ft. water-wheel, 3 feet 6 inches in breast, has been erected, together with pumping apparatus, and a splendid drawing-machine every part of which has been obtained new from the foundry. The engine-shaft has been sunk 12 fathoms under the adit level, and the 12 fm. level is now being opened out on a rich course of blende and lead ore, the other component parts of the vein being barytes, carbonate of lime, and crystallised and sugar spar. The lode here resembles the lode at Snailbeach and Tankerville more than any other I have seen in Cardiganshire, and I doubt not will be found very rich, like them, as ground is opened in depth as well as in length. At present the ore is being kept on the mine until a crusher and dressing-floor shall be prepared, and which wil be proceeded with in good time.

Opposite the South Bwadrain are the Rheidol Valley Lead Mines. These mines have produced enormous quantities of both lead and blende ores, and during the past few months an ample capital has been subscribed for bringing them into a permanently profitable state. There are thousands of pounds worth of lead and blende ore now at surface which could be returned, if a stone-breaker were erected, at one-third of the value of the ores. The underground bargains are opening out satisfactorily, and nothing can possibly prevent these mines becoming very prosperous, even if they are managed (or mismanaged) very indifferently.

It will be seen, then, that where capital has been judiciously ap-

plied the results are excellent—first at Tylwydd, next at South Bwadrain, and lastly at the Rheidol Mines. The others, having no capital expended on them, will, it is to be hoped, before long, receive some of the attention which their neighbours have recently done; and in November, 1875, I hope to be able to write that Gothic and Gellirei-rin may be added to the list of profitable mines being worked in the valley of the Rheidol, which I anticipate will at no distant date become the richest district of the lead mines of Cardiganshire.

Goginan, Nov. 17. ——— ABSALOM FRANCIS.

GLYN MINE (FORMERLY THE PEN-Y-CLYN).

SIR,—On looking over the Mining Correspondence in the Journal of Nov. 7, I see an article appears respecting the above mine, and from which I beg to differ, and wish to give the public some authentic information. Having been the late manager of Pen-y-Clyn, I think you will agree with me that I ought to know the boundary of the sett. Pen-y-Clyn sett is next to the Van Mine, the western boundary of the Van sett is the eastern boundary of Pen-y-Clyn, the western boundary of Pen-y-Clyn is the Van Consols eastern boundary, so that the entire sett of Pen-y-Clyn, which is nearly a mile square, lies between Van Consols and the Van Mine; and to put your correspondent right the Pen-y-Clyn Mine is still worked by a private company, who have no connection with Van Consols or the Glyn Mining Company. The public should know that Van Consols formerly was Bryntail, and the new mine now called the Glyn is a portion of Bryntail sett, altogether to the west of Pen-y-Clyn Mine.

Nov. 17. ——— JOHN LEAN.

THE SHROPSHIRE LEAD MINES.

SIR,—I think some good might arise if a nominal association could be formed to bring together for the support of common interests some of those connected with the district of these mines. I have noticed in your columns that an association existed amongst the Cornish miners for the purpose of resisting the rating of plant and machinery only. I devoted, in concert with others, chiefly Mr. John Taylor, some time of this last summer in endeavouring to extend the objects of this Cornish society to lead mines, though placed at a disadvantage through not having the chance of speaking on the rating question in Parliament, and through finding such great difficulty in obtaining concurrent action amongst gentlemen scattered throughout England, who will find, I hope, next year what rating privileges were obtained for lead mines. I say next year, for this year in Shropshire the old rates have unfortunately been paid as usual, from the want of a paid officer or an association to inform the rural authorities of the retrospective provisions of the new Rating Act. I shall be sorry if next year the Shropshire companies, whose captains have plenty to employ their time, continue to pay the rates from which for nearly 20 years members of Parliament have been trying to render them exempt, through want of trifling attention to the subject. I believe, also, a narrow-gauge line to accommodate the mines would have been made last year if all interested in the district could once have met; and I could point out other questions—such, perhaps, as royalties and the pollution of streams—which might not unfitly be considered by shareholders, as well as directors and landlords, if once or twice a year, in Shropshire or in London, all these parties could privately meet together.

All other mining interests have their associations, which can take concerted action when occasion requires, and in case the suggestion that other than Cornish mines should be considered to have practical value, I should be glad to try to carry it out. R. J. MORE.

Linley, Shropshire, Nov. 19.

ROMAN GRAVELS MINE.

SIR,—I have no desire, nor have I time, to enter into a newspaper controversy with those gentlemen whose letters on the above mine have appeared lately in the Journal. But several facts having been misrepresented, and wrong impressions made on the minds of the shareholders, I feel called upon to reply to one of the said letters.

1.—Regarding the boundary, the 65 end south is driven over 180 fms. from old engine-shaft, and we have nearly half-a-mile of the sett yet before us on the course of the Roman lode. The 65 end is driven north of shaft 15 fms., and we have about 60 fms. more to drive to reach the boundary.

2.—The Dip of the Ore: The 95, north of shaft, is in a lode 5 ft. wide, worth 6 tons per fathom. The 65 south is in a lode 6 ft. wide, worth 4 tons per fathom. The length of ore ground explored from one end to the other up to date is in round numbers 200 fms., the value of which varies, as stated in the letter in question, from 4 to 2 tons per fathom. The ore dips north conformable to the dip of the shale, which is nearly 5 ft. in 6 ft., and the same remarks apply to the dip of the ore towards the shale southwards, so that the ore ground goes on increasing in length about 25 fms. for every 15 fms. the mine is deepened.

4.—I am asked, "Why don't you sink the old engine-shaft?" and my reply is as follows:—The Roman lode passed through the shaft a little below the 30, and consequently at the 95 we have a cross-cut of about 54 fms. to get to the lode again. And when I tell you that it takes about 15 to 18 months to sink the shaft 16 fms., and over 2 years to drive 50 fms. of cross-cut, and that the underlay of the lode adds 5 to 7 fms. to the length of each succeeding cross-cut. I do think you will say the old shaft is too far from the lode to be available below the present bottom of the mine. But have we not been sinking an engine-shaft with a view to prospective gains and permanent existence. Corfield's new engine-shaft, 12 ft. long by 6 ft. wide within timber, is sunk from surface 109 fms. 2 ft. deep, is communicated by cross-cut to the 50, and by the end of this week will also be holed to the 65 fathom level, on Roman lode. It will, all going well, be down to the 80 in six months, and I trust as deep as the 95 before that level from the old shaft is driven up to the new one. It must be clear to everybody that were we influenced by immediate gains no new shaft would have been sunk, but we should have gone on contentedly driving up the levels from the old shaft and exhausting the ore ground to the 95.

We have been constantly driving the 65 south since the company came into possession, nearly five years; we found the end 53 fms. south of the shaft, and it is only now 180 fathoms beyond. The 80 end is nearly 80 fathoms behind the 65 end, and the 95 south is about 62 fathoms behind the 80. It will take five to six years to drive the 95 south up to a point corresponding to the present 65 end.

The 95 north is going forward in ground that is whole to the 65. I consider those particulars necessary to show that the company, instead of being near the beginning of the end, are only just entering the good times coming in their career. And now one other remark and I have done.

Every stope in the mine is being worked from the end of a winze, and in every instance the stuff falls down into a level. Nobody will object to this mode of working. The stopes north and south of Nos. 1 and 2 winzes, in back of the 95, are some of them 30 fathoms, and others more than 60 fathoms, to the north of the 80 fm. level stopes, at and about Corfield's; therefore the comparison drawn, and which on the face of it shows a falling off in value in the deeper stopes, is illusory. It was not drawn, I am inclined to believe, for the purpose of deceiving, but it misstates the facts of the case.

The old shaft only admits of winding with one kibble at a time, and that a small one, and we are drawing stuff throughout the 24 hours, with three relays of men, and were 1000 tons of ore per month broken we could not at present send more than we are doing into the market. With Corfield's shaft down on the course of the lode, in the centre of the mine, and heart of this unusually long run of ore ground, it will be seen whether the present mode of development does or does not augur well for the future of the company.

——— ARTHUR WATERS.

ROMAN GRAVELS MINE, AND MR. RICHARD TREDINNICK.

SIR,—Being largely interested in the Roman Gravels Mine, I beg to caution my fellow-shareholders against putting any faith in the remarks of Mr. Richard Tredinnick, who has done all he can to depreciate one of the best lead mining properties in the United Kingdom. It would be satisfactory to the shareholders of Roman Gravels if the directors would issue a statement respecting the present and future prospects of the mine. The manager—Capt. Arthur Waters—knows better than anyone as to the merits of this valuable property, and I am sure a report from him would give general satisfaction. I trust the shareholders will not be led away by any untruthful statements, whether in public print or private letters.

Poultry, Nov. 20. ——— HY. GOULD SHARP.

MR. TREDINNICK, AND THE ROMAN GRAVELS.

SIR,—The reply to this gentleman's letter is very simple. It is well known that experts have placed the lasting powers of the mine on a more sanguine footing than the present captain's reports. It is also understood that the present company have broached the subject of the extension of their present lease. If they obtain the extension, and there is no doubt they will if desired by the shareholders, the more extended workings will follow assuredly.

Nov. 18. A BELIEVER IN THE ROMAN GRAVELS AS A PERMANENT INVESTMENT.

ROMAN GRAVELS MINING COMPANY.

SIR,—I do not think Mr. Tredinnick has any right to expect rest or freedom from paper controversy if he makes such observations, or draws such absurd conclusions, as to the value of this mine. He takes the report of Capt. Waters, of the 5th inst., and instances the 65 and 80 south. Now, both of these levels are south of Corfield's winze, which the report clearly states, and the ends are not under each other by many fathoms. The 65 is worth 4 tons. The 80, after passing through some fathoms of rich ore ground between Corfield's winze and its present end, is just entering a rich run of ore. The 95 is many fathoms *north of Corfield's winze* (and at present is worth 2½ tons), between which and its present end will be found some very rich ground; in fact, it is there where from the first driving of the level the rich ground was expected to be found, and therefore I cannot believe, and it seems to me ridiculous to suppose so, that to take the value of the levels in their present position, and add them together, will give the value of the mine; and although he says that he has on opinion on its value, if he has derived it from the figures he has given, I venture to say that the shareholders need not take any notice of it. I do not think it of any value. Then, the way he speaks of the new engine shaft and its uses, I think, clearly shows he cannot know much about it.

Nov. 17. ——— SHAREHOLDER.

SOUTH CONDURROW MINING COMPANY.

SIR,—I have read the letter by Mr. W. Leach in last week's Journal, and permit me to say, in reply—

1.—That I am interested in a large number of shares, although only an actual registered holder of three.

2.—Messrs. Bolitho and Sons will probably answer the insulting remarks "for whose benefit and other smelters South Condurrow seems long to have been worked."

3,—That as representing this respectable firm at the meeting, I beg to express my surprise at such suggestions.

Mr. W. Leach asks the shareholders if they prefer to "trust the destiny of the mine to this gentleman" (myself) rather than to the Scotch committee, representing nearly 3000 shares. Well, Mr. Editor, I have not asked for this great responsibility, and if Mr. Leach has read my circular, the object was clearly to afford Messrs. Vivian fair play. As to the committee being supported "by nearly 3000 shares," this I defy them to prove, even to the extent of 2000. After indulging in remarks because I choose only to be registered for three shares, Mr. Leach suggests "my being the last person who should undertake the defence of the managers." Why, I do not know; perhaps, it is strange to Mr. Leach that a defender should be found who enters the field and asks only for justice. Let the best evidence of this be in the following, the objects for which a special general meeting is to be called:—

1.—To appoint a committee of five shareholders, who shall be vested with the power to make a thorough investigation into the mode of working lately practised, and the expenditure thereby entailed.

2.—To set aside any resolutions that may have been carried at any previous meeting, removing the Messrs. Jos. Vivian and Son from the post of managers, and Mr. Joseph Vivian, jun., from the office of purser.

3.—To pass such resolutions as may be necessary to re-instate the said managers and purser to their former positions, if such be determined upon.

Excuse the trouble I am giving, but the insertion of this letter will oblige me, as I wish every holder to know what objects I have in using the proxies. Let me urge shareholders to attend the meeting, and I shall be prepared to prove that my motives and exertions are for the good of the mine, desirous of having men at the helm who understand their business. E. J. BARTLETT.

Great St. Helens, Nov. 16. ———

SOUTH CONDURROW MINE.

SIR,—I had no intention to trespass on your space again in relation to the conduct of certain individuals, but Mr. Leach's letter calls for a remark. I regret nothing I said at the meeting of South Condurrow; but if language can express in stronger terms my disgust and contempt of acts which from the general body of shareholders and adventurers in other mines have met with a signal approval. My language, whether in anger or cool collectedness, others designate as "a righteous indignation." How long I have been a shareholder, and how many shares I hold, are alike irrelevant to the question at issue. That Mr. Marshall holds a large number of shares, and is, therefore, a fit person to be on the committee is alike preposterous. His fitness manifested itself in the reasons he gave, for his conduct has already been condemned by impartial persons.

Mr. Leach offers no reason for the insinuations that Messrs. Bolitho being large holders the mine appears to be worked for their benefit. Did Messrs. Bolitho not give the highest price for any portion of tin sold during the past quarter? They did not buy at the lowest price, as did another company. If Mr. Leach wants an inference let him draw it. Of the twaddle that Cornish mines are worked for the benefit of smelters and merchants, are there no railways, no manufactories, no foundries, and no smelting works that fail to pay any dividends? I can tell Mr. Leach of instances in each. For whom are they worked?—The shareholders. If the prices of tin, labour, and materials are not such that in a mine like South Condurrow dividends are not so plentiful, it is no uncommon occurrence in the experience of the most ordinary mortal in his own trade to fail in making profits. Mr. Leach does not attempt to justify the change his friends intended: he simply asserts that "there are as good fish in the sea as ever came out." There may be; it remains to be proved; they may not go to the sea for them.

On the question of audit of mine accounts, which again shows Mr. Leach's innocence of any knowledge of them, let me tell him my experience, that he may in future know more about what he writes of. The duty of purser is to check the manager's accounts, to see there is the correct quantity, and the price is right, and not more than the best mines pay. If too much the invoice is, to use a common expression, "cut down" in price before the account is entered in the mine ledger. These invoices are forwarded to the secretary in London, with the cost-sheet, whose duty it is to see the amounts, &c., are correctly carried out. These invoices are again placed upon the table at the meetings of shareholders for anyone to examine. At meetings held on the mines in Cornwall it is usual to see the shareholders scan the respective bills that too much is not charged, with an eagerness that would make one suspect there was some dishonesty being perpetrated. This system, I need not say, is better than the certification of a thousand London auditors, who know nothing of mine accounts, and if they did have only the vouchers at the command of the secretary. How child-like is innocence where knowledge is absent. I regard Mr. Leach as no more qualified than the rest of his friends to improve the position of our property. Nay, it is evident that in such hands we need expect nothing but disasters.

I heard of a Mr. Leach, a gentleman and shareholder, who, after a thorough inspection, and after he had returned home some hundred miles in gratitude for the very substantial manner with which the machinery, tin floors, and works had been performed, sent to Capt. Vivian a quantity of champagne as a slight token of his appreciation of Capt. Vivian's services. Is this the same Mr. Leach?—Yes. Probably tin was then high in price.

I disclaim any friendship or interest in Messrs. Vivian beyond their just claim on society for the integrity of their conduct and superior ability that has characterised their work. I have not heard, directly or indirectly, from father or son for many years, saving their reports, &c., in the public papers. The attitude I have assumed is one my conscience approves, and one from which I shall not shrink until all my fellow-shareholders have expressed, or had an opportunity of expressing, their opinion upon what I should call the act of the possessor of a cloven foot.

Nov. 17. ——— H. WADDINGTON.

SOUTH CONDURROW MINING COMPANY.

SIR,—It is obvious from the fact of so many letters in the Journal last week that Messrs. Bartlett and Waddington had done their utmost to stir up the feelings of shareholders against the proposed change of management. As an old shareholder, I would recommend those two gentlemen to look after their own business, for their object is clearly seen and fully appreciated. Making every allowance for the fall in price of tin, there are few who know anything of mines and mining, more especially those living in Cornwall, but will admit that we have a first-class mine, and had the management been any way economical and energetic, South Condurrow would have resumed its place on the Dividend List before now. Let me suggest to the Scotch shareholders, and others who agree with them in reference to a change—1st. That the London committee be dispensed with; 2nd. That a local purser be appointed; 3rd. That Capts. Teague or J. Thomas take the supervision of affairs. Other London shareholders besides myself think if this were carried out the market value of the mine would be doubled. I need only call the attention of shareholders to the advance some two years ago when a change was contemplated—did that imply confidence in the management?

London, Nov. 18. ——— A LONDON SHAREHOLDER.

SOUTH CONDURROW MINING COMPANY.

SIR,—In last week's Journal I notice a letter casting a slur upon the efforts of Mr. Bartlett to reinstate the Messrs. Vivian to the management of South Condurrow. Permit me to say that I have given Mr. Bartlett my support, and recommend my fellow-shareholders doing the same. HOLDER OF FIFTY SHARES.

London, Nov. 19. ———

SOUTH CONDURROW MINING COMPANY.

SIR,—Being a small shareholder in South Condurrow Mine, I received a statement of the accounts and agent's report, both of which I should think, from the depressed state of the metal trade, ought to be satisfactory to the shareholders, as the mine has cleared 2216*l.* 4*s.* 5*d.* for the last four months. At the meeting, held upon the 5th inst., I find the following:—"Resolved, that the services of Mr. Joseph Vivian, jun., purser, and Capts. Joseph Vivian and Son, agents of this mine, be, and are hereby, dispensed with, and that they be paid their respective salaries for the month, in lieu of one month's notice." I enter my protest against such resolution, and can designate it no better than a "stab in the dark." I know nothing of the qualifications of those gentlemen, but I think it most unfair to them to bring such a resolution before the shareholders without stating fairly and honestly the charges they have against them. In my opinion, it would be something like placing a man in the bar, and without bringing any accusation say he was a criminal and condemn him. I am glad to see the mine improving.

Belfast, Nov. 14. ——— AN IRISH SHAREHOLDER.

SOUTH CONDURROW MINING COMPANY

SIR,—I thank you for inserting my last letter, and would not again trouble you but I notice the letter from Mr. Leech, in which he alludes to the destiny of South Condurrow" being entrusted to Mr. E. Bartlett. Now, I have carefully read the gentleman's circular, and cannot find any such wish expressed, but, rather, statements perfectly just and *bona fide*. Instead of such suggestions undoubtedly unfounded being made, I for one consider Mr. Bartlett entitled to the warmest thanks of every right thinking man, and at the meeting shall not hesitate to express these views.—*Stoke Newington, Nov.* 17. HOLDER OF FIFTEEN SHARES.

[For remainder of Original Correspondence, see to-day's Journal.]

Meetings of Public Companies.

THE DYNEVOR, DYFFRYN, AND NEATH ABBEY UNITED COLLIERIES COMPANY.

The statutory meeting of shareholders was held at the offices, Gresham House, on Tuesday,—Mr. ADAM SCOTT in the chair.

Mr. J. A. MAYS (secretary) read the notice convening the meeting.

The CHAIRMAN said this meeting had been called in accordance with the Companies Act. It was not customary at these statutory meetings to submit either accounts or reports. For the information of the shareholders he might state that the properties had been acquired and paid for, and that the company was now working them. The properties were so closely connected with each other that their consolidation could not but result in great advantage, particularly when the consolidation had been properly effected, and when the directors submitted to the shareholders the first statement of accounts he had no doubt they would show a very satisfactory result. Mr. Bidder, one of the managing directors, would be glad to reply to any enquiry which the shareholders desired to make.

A SHAREHOLDER asked what number of hands were at present employed?

Mr. BIDDER said including the miners there were nearly 2000 hands employed.

A SHAREHOLDER asked the amount of the present output?——Mr. BIDDER said there would be about 1500 tons of coal daily for each working day, but that while the enterprise was so young he did not like to commit himself to any exact statement.

The CHAIRMAN said it was usual in colliery accounts to reckon 260 working days. He added that although the company only took possession in October they received the profit from July last.

A vote of thanks to the Chairman and directors closed the proceedings.

LLANGENNECH COLLIERIES COMPANY.

A meeting of debenture-holders was held at the City Terminus Hotel, Cannon-street, on Monday,—Sir THOMAS G. BROWNE, one of the trustees for the debenture-holders, in the chair.

The CHAIRMAN said, before proceeding to the business of the meeting, he would ask the debenture-holders to allow him to say a word or two with respect to himself. When he was asked to act as trustee for the debentures he had declined, as he did not know anything about mining, but he had been assured that the duty of the trustees was merely to see that the proceeds of the mine, so to say, or the profits of the mine, were not diverted until the debenture holders had been paid in full. He then assented, but in doing so he wished to see if the mine was likely to be as remunerative as to pay the interest to the debenture-holders. In answer to this he had been shown reports on the property made by Messrs. J. T. Ramsay and W. Dredge, and Messrs. E. and E. Daniel, of Swansea, who had visited the property. However, as he was not himself acquainted with these gentlemen, he had written to a friend of his in Carmarthenshire, and his answer being thoroughly favourable he had determined to become one of the trustees, the more especially as he was to be associated with such able gentlemen as the rest of the trustees, one of them being Mr. Charley, M.P., himself a legal gentleman. On becoming a trustee he (the Chairman) had himself taken a considerable number of debentures, thus showing his confidence in the undertaking. The debentures were issued, but the subscriptions not having amounted to the 80,000*l.* offered the trustees demurred in allowing them to be issued. There was some considerable discussion on the point, and the directors being extremely anxious to bring them out sent the trustees the following memorandum:—"Resolved, that after careful consideration and consultation with the managing director, Mr. John Thomas Ramsay, and the receipt of the above letter, the directors have come to the decision that for the present the working capital of 27,000*l.* is far more than is required, and they, therefore, consider that an allotment of bonds might be safely made at a minimum subscription of 60,000*l.*, and that under no circumstances should more than 70,000*l.* be allotted." Considering that the directors had information which the trustees could not have on the subject, and placing entire confidence in the directors, knowing the great stake which they themselves held in the mine, and also having the report upon which they had based their resolution, the trustees decided upon issuing the debentures, and they were accordingly issued. After that the first payments were made. He thought, however, that it would shorten matters if he called upon Mr. Billinghurst to read a memorandum, which sets forth what had taken place since. Mr. Billinghurst would also read a circular which had been addressed to the debenture-holders.

Mr. BILLINGHURST (of the firm of Messrs. Billinghurst and Wood, solicitors for the trustees) said they were in this difficulty: the debentures being payable to bearer they only knew who the debentures were issued to at first, and, therefore, they had no means of communicating directly with each of the debenture-holders as they would have in the case of the registered shareholders of a company, and although a copy of the circular he was about to read had been sent to each of the debenture-holders whose address was known it might not have reached many of them. In addition to this, the advertisement calling the meeting had contained the object for which it had been called as fully as could be. Mr. Billinghurst then read the circular, dated Nov. 12, from the offices of Messrs. Billinghurst and Wood, 7, Bucklersbury, of which a copy was sent to the shareholders.

Mr. BILLINGHURST then read a more detailed statement which he had been authorised to make by the trustees, which contained the report made on the property by Mr. Chubb, dated Aug. 14, 1874.

The CHAIRMAN said Mr. Chubb was present, and if the debenture-holders desired he would call upon him to state his opinion on the state of the collieries, or perhaps it would be better for any gentleman to ask Mr. Chubb on any point, and he would be happy to afford any information.

Mr. HAYWARD thought the correct amount of debentures was 60,000*l.*, but it had just been mentioned that the amount of debentures issued represented 67,000*l.*

Mr. BILLINGHURST replied that the difference was to be seen in a moment. There were 6000*l.* or of bonds, upon which 5000*l.* had been borrowed. Taking the two together, the 61,600*l.* subscribed for in the ordinary way, and the 6000*l.* pledged made the total of 67,600*l.*

Mr. HAYWARD asked if the trustees had the power to pledge the bonds to get a temporary loan from the bankers?——Mr. BILLINGHURST said the trustees had power to do so provided they thought it in the interests of the debenture-holders.

Mr. HAYWARD: Is that the 5000*l.* the board have guaranteed?——Mr. BILLINGHURST replied in the affirmative.

Mr. HAYWARD: Of the 61,600*l.* was 53,000*l.* paid to the vendors of the property?——Mr. BILLINGHURST: Yes.——Mr. HAYWARD: And 16,000*l.* of debentures were taken by the vendors?——Mr. BILLINGHURST: That is so, the 16,000*l.* being part of the 53,000*l.*

Mr. LEGGE said they had just heard Mr. Chubb's opinion given in detail by Mr. Billinghurst, but if there was anything further that had occurred to him since the report the debenture-holders would be glad if Mr. Chubb could throw any further light on matters.

Mr. CHUBB, in reply, said he could do nothing but go over his report again; but if any specific information was required he would be happy to give it to the best of his ability.

Mr. SWINDALE asked if any meetings had been held of the proprietors of the company, because he had not seen any report of any such proceedings?——Mr. STALLARD (one of the directors of the company) said several meetings had been called—two ordinary general meetings and a special meeting for the purpose of authorising the issue of preferential capital.

The CHAIRMAN said hitherto the debenture-holders could not have been called so long as their interest was paid regularly; there would have been no excuse for calling them together. As soon as possible after the receipt of an intimation from the directors that the debenture interest could not be paid they had been called together. The trustees did not attend the meetings of shareholders as they had merely to represent the debenture-holders.

Mr. H. J. THOMAS said he had received a notice dated March 18 which he thought was relevant to the present question. Of the 80,000*l.* originally proposed 59,000*l.* at that time were allotted. He thought the company was then in a very prosperous condition, and he had never heard anything contrary, and he was led to invest 200*l.* in debentures, having in the previous year invested 200*l.* It was then stated that the profits on 100 tons per day would more than pay the debenture interest. A considerable sum was said to have been spent on St. David's pit, and in consequence he had believed the mine to be in a prosperous condition. Some 15 or 20 years ago he had been in the habit of purchasing as much as 3000 or 4000 tons a-year out of this colliery. Taking all things into consideration, he thought the document of March 18, 1874, a very deceptive one.

Mr. HAYWARD wished to ask the directors of what the capital of the company consisted, and if it had any paid-up capital? He had read the prospectus carefully, and had found it singularly silent about the paid-up capital.

The CHAIRMAN thought it would be better to hear the directors first. It must be remembered that the meeting was called in the interests of the debenture-holders, not of the share-holders of the company, or the ordinary creditors, although anything which would promote their interests would probably benefit the debenture-

holders; but it should be understood that there was a marked distinction between the share-holders and the debenture-holders.

Mr. H. Lloyd had lately been residing in Carmarthenshire, and had lately visited the mines himself, and he was sorry to say he had not found them as he considered they should be. On enquiry, he found that very little of what ought to have been done had been done, and he had determined not to lend any more money to the company. He had an idea that the debenture-holders money had done all that had been done. With respect to the small coal, there was no great quantity there to be made into the patent fuel. It appeared to him that things had been going wrong for a considerable time, for 3000*l.* could not be owing in a day, and he thought they should have been made acquainted with this state of things through the medium of the press, for it had been stated that it was a difficult thing to know where to send the notices. He had been sadly distressed when he received a sudden notice on Friday, that perhaps his 400*l.* was sunk in the pit.

Mr. Hayward said it appeared to him that the share capital authorised was 120,000*l.*, of which 100,000*l.* had been issued as fully-paid, in part payment of the purchase money for the property. In actual cash the vendors got 37,000*l.*, and 16,000*l.* in debentures, and they were, he said, told to-day that the mine was worth nothing, and this about two years subsequently.

After a few other remarks, a question was asked if the existing directors were the same as those under whom the prospectus was issued?——Mr. Billinghurst said only one of the original directors now remained—Mr. Wilkinson—and he had made himself liable in the interests of the company.

Mr. J. Luttman (secretary of the company) read the circular issued by the directors, dated Nov. 13, of which a copy was forwarded to the shareholders.

Dr. Stallard (one of the directors of the company) said he was not one of the original directors, and he did not feel himself called upon to justify the manner in which this company was formed. His own opinion was that nothing had been concealed in the matter. The interests of the shareholders, it was understood, came after the debenture interest, and that the property was more than sufficient to meet the requirements of the company's capital. He thought the Articles of Association gave claims on the property which should not have been made. The salaries given to the various persons connected with it would have been a very serious item, and steps were taken to reduce the expenditure. For himself, he had joined the board in February last, having purchased his shares for a consideration, unfortunately, in the belief that the property was what it was represented to be. He still believed it to be a splendid property, and he had not lost faith in it. He came before them with clean hands, for he had not only not received a farthing in any way, either from the company or its connections; but, on the contrary, he was personally liable for the 5000*l.* which had been advanced by the bankers to enable them to carry this concern on. They had stated that much of their difficulties had been caused by the unforeseen fall in the price of coal. Exception had been taken to the statement in the circular that 100 tons per day would pay the interest on the debenture capital. At the time, and during the latter part of last year, the output had been slowly increased to 4000 tons per month, and the average price in December was 16s. per ton. Taking all things into consideration, they did not think they had over-estimated the prices, but adverse circumstances occured in the prices of coal, and then they could not open the roads so easily as in a pit where everything was *couleur de rose*. They had to carry on the business all the time, increasing the output, and doing what was necessary with old and imperfect machinery. Taking all things into consideration, he still believed they could have placed the coals at the time for 18s. per ton, which would have given the company a profit of 6s. 6d. per ton, or to reduce it further, he would say at a profit of 5s. per ton. The actual figures were as follows for the price obtained for the coal:—October November, and December last year, 16s. per ton; January, 14s.; February, 14s.; March, 14s.; April, 12s. 10d.; May, 12s. 7d.; June, 12s. 3d.; July, 13s. 6d.; August, 11s. 8d.; September, 12s. 4d.; and October, 11s. 3d. The variation in the proportion of small coal would somewhat vary the average monthly price.

A Debenture Holder: Is that price at the pit's mouth?

Dr. Stallard: No it is at Llanelly, and I suppose there would be a small deduction for putting it on board; it is not a large one though. Of course it was not possible when making their calculations to say what the price of coal would be, but he thought they were not wrong in believing that there would be a margin of 4s. or 5s. per ton, and that upon 100 tons a day would have enabled them to keep their engagements. In his opinion the great difficulty was insufficiency of capital, and the impossibility of carrying out the prospectus without the full subscription for the debentures, but the belief had existed that the balance of the debentures would be issued. However, that idea practically failed, only about 2500*l.* being subscribed, and then it became desirable to entertain a fresh plan, and the debenture trustees were applied to assist them, and it was in consequence of their difficulties, which had not been entirely unknown to the trustees, that the board had felt it absolutely necessary to inform the trustees to the best of their ability what was going on, because they had nothing to conceal from them practically speaking. The only secret was the 5000*l.* which he with Mr. Wilkinson and Mr. Paddison had obtained by lodging 6000*l.* worth of debentures. If the property was worthless they would, of course, lose their money like therest. They exceedingly regretted the unfortunate position in which they had been placed, but he thought they had a claim on their consideration as being placed in the position in which the other debenture holders were. As to the future, the directors and the trustees had told them all they know. He thought it was quite necessary to have 5000*l.* at once. The directors would do their part in the matter, but they felt that they could not extend their personal liability further than they had done. He would strongly urge the formation of a committee, with the view of immediately raising money to carry on the thing from day to day, even for the purpose of effecting a sale, for if something was not done the mines would fill up with water, and then they would not get a shilling in the pound. The shareholders, as shareholders, were quite willing to put their interests on one side, and he could say for himself that he was more interested in the debentures than he was in the company. He would ask the secretary to read a letter from Mr. Newman on the question.

The Secretary then read a letter from Messrs. Newman, Dale, and Stretton, solicitors to the company, which stated that the papers left with them had been perused, and they had arrived at a definite conclusion as to the course to be pursued. They suggested that the debenture holders should be asked to reduce their rate of interest to 7 per cent., and that preference share capital should be raised to provide sufficient working capital, and the remaining debenture bonds should be issued.

Mr. Paddison (a director) said certain questions had been asked about the formation of the company, and he wished to give some information on the subject. The 100,000*l.* was not issued to the public, but it was taken by a number of people who subscribed together, or rather combined together. Out of the 53,000*l.*, 16,000*l.* was taken in debentures and 37,000*l.* in cash, and the first half-year's interest was deposited.

A Debenture Holder: The original shareholders did not subscribe anything then?——Mr. Paddison: They did not pay for their shares.

The Debenture Holder: Then the whole thing has been carried on on the debenture money?——Mr. Paddison, in reply, said it was assumed that that was in part payment of the purchase money; 53,000*l.* was the amount of the purchase money, and out of that 16,000*l.* was taken in debentures and 37,000*l.* in cash. After the interest had been paid to the debenture holders the whole of the remaining profits had been expended on improvement at the collieries; 53,000*l.* had to be deducted from the 80,000*l.*, which represented 27,000*l.* for the necessary improvements. Instead of 80,000*l.* only 67,000*l.* of debentures was issued, so 53,000*l.* had to be deducted from 67,000*l.*, which would be about 12,000*l.* which had been paid by the trustees for the development and improvement of the property, and about 20*l.* for other purposes. In the first instance, reports were made by Mr. Ramsay and Mr. Dredge, and they estimated that about 26,000*l.* would be wanted as capital, of which about 15,000*l.* would be wanted for trucks and cottages.

A discussion ensued on the wording of the original prospectus, until Dr. Lane pointed out that the subject was not relevant to the purposes for which they had been called together.

The Chairman explained what the trustees had been asked to do, the directors having stated that the company was in arrears of royalties, wages, &c., which must be paid or the property would be lost, and, of course, the trustees were anxious that the property should not be lost. He asked Mr. Chubb if the debenture holders could get the 5000*l.* now spoken of it would keep the company in such a position as to enable the directors to do anything in the way of taking it over or selling it to better advantage?

Mr. Chubb replied that unless the money was found there would be no chance of selling the property at any price.

Mr. Hayward asked if the money raised would be taken by the directors to pay their guarantees?

The Chairman replied in the negative. The money would be used to pay the royalty, the men's wages, and that sort of thing. If all the debenture-holders did not assent to the proposition those who did could not bind those who did not, and it was right that the difficulty should be properly looked in the face. There were two things possible; one was to raise a certain sum to keep out the water and pay the absolutely necessary debts, and then to sell it for what they could get, and if, in the meantime, the directors could raise capital he thought the debenture-holders would be very glad to hand the property back to them. (Hear, hear). He thought they should not object to take a lower rate of interest. He would ask Dr. Stallard if he thought that by getting 5000*l.* it would not be throwing good money after bad?

Dr. Stallard thought that 5000*l.* was absolutely necessary at once, and that a committee should be formed to confer with the trustees and the directors as to the future. If no philanthropic debenture-holder would advance the 5000*l.*, the only thing would be to appoint the committee to get the amount required. He was quite prepared to co operate with gentlemen to raise the 10,000*l.* which he considered really necessary to secure the property, either by the formation of a new company, or by the sale to any other persons.

Mr. Billinghurst said that any course of action decided upon must be so decided upon individually, for the trustees could only take certain action on their behalf, such as taking the property, which they had done already. Under the circumstances of the case he thought the plan proposed by Dr. Stallard was the most practicable one. Certain it was that if some action was not immediately taken, the action which was being taken on behalf of certain of the lessors in the Court of Chancery to wind-up the company and so enforce their claims would have two effects; one very much to diminish, if not to entirely destroy their property; the other, which did not concern them individually, but which would very prejudicially affect them generally, would be the winding-up of the company. The existing machinery of the company was very valuable, and if the money could possibly be raised it would be a sad thing for the debenture-holders to let the company be wound-up.

Dr. Stallard, in answer to a question, said he thought he could get the 5000*l.*, but it would be on condition that their previous guarantee was first redeemed. There were about 180 acres of the 6-foot seam still in their hands unworked. The total area of the property was about 2400 acres.

Mr. Wilkinson said he was one of the original directors. After mentioning one or two facts connected with his association with the company, he expressed his opinion as a steam-shipowner that the coal obtained from the collieries of this company was greatly superior to the best of the Hartleys. As to his taking any plunder from the concern it was quite wrong, for he had bought shares to the extent of 1000*l.*, and he thought that should be a proof that he was sincere in his desire to push the interests of the company. He had only joined believing there would be no difficulty in raising the 80,000*l.* He thought the debenture-holders should nominate a committee, and the directors would only be too happy to render every assistance in their power. If the 5000*l.* was subscribed it would give them breathing time to see what was to be done.

Mr. Paddison said he held about 7000*l.* in debentures and a great many shares: the company owed him 7000*l.*, and besides this he was responsible to the bank for the loan. He thought the better way would be to raise the whole of the 20,000*l.* preferential capital.

Dr. Stallard thought he could get the 5000*l.* if the same security was extended so as to cover the guarantee which they had given to the bankers, and he thought the request was only a reasonable one on their behalf. They would give up the securities on condition that they had the leases as their security for the whole amount. He thought if this were done he could get substantial persons to join him in seeing that the colliery was kept going for two months, and then some cheme could be prepared. Unless 5000*l.* was at once obtained the property would be destroyed.

After some further discussion, Dr. Lane proposed, and Mr. Charley, M.P., seconded, the following resolution:—"The directors propose that the trustees acting on the behalf of the debenture-holders do give them possession of the title deeds, and permit them to hypothecate the same for 10,000*l.*, of which one-half shall be devoted to the immediate necessities of the works, and the other half devoted to release the 6000*l.* in debentures pledged by the directors to their bankers for advances already made."

The resolution on being put was not carried, but Mr. Billinghurst having fully explained all the bearings of the case, and having stated that immediate application could be made to the Court of Chancery to allow of the proposed hypothecation, the resolution was carried *nem. dis.*, and the majority of the debenture-holders present gave their names and the amount of their holding, with which to back up the application to the Court of Chancery.

A committee consisting of the following gentlemen was then formed:—Dr. Lane, Dr. Stallard, Messrs. Paddison, Thomas, and Downes for the purpose of conferring with the trustees as to the future of the company.

On the proposition of Dr. Lane a cordial vote of thanks was passed to the Chairman, and the meeting then broke up.

LITTLEDEAN WOODSIDE COAL COMPANY.

A general meeting of the shareholders was held, on Wednesday, at the Townhall, Cinderford, near Newnham (Mr. Alfred Ridler in the chair). Mr. James M. Johns (the secretary) read the notice convening the meeting; and the accounts made up to October 31, which showed a profit for the quarter of 519*l.* 3s., were submitted and passed. The Chairman read the following report, which was unanimously adopted:—

Your directors regret that during the last quarter the position taken by the men relative to wages has been most antagonistic, and although the price of steam coal has fallen 3s. per ton, or from 11s. to 8s., the wages have only been reduced equivalent to about 10 per cent.; consequently, in trying to get the labour to meet the fall in coal much time has been lost, and dead expense incurred. Your directors have made somewhat better arrangement during the last month, and proceeding more satisfactory: such being the case, they did not consider themselves justified in giving notice of a 10 per cent. reduction, as done by some works in the Forest, and thus causing a further suspension of the works. Still, your directors have pleasure in pointing out that, even under the great disadvantage of the quarter, the profits have nearly been equal to 10 per cent. per annum; but as the capital is now indebted fully equal to the number of unissued shares, and interest has to be paid on this money, they consider it would be much better to the interest of the company not to pay any dividend but to reduce the capital. Your directors also think it would be advisable to hold the meetings half-yearly for the declaration of dividends, as any stoppage of the works from any cause whatever interferes with the profits of the company; and the time being so short does not allow of these being made up; and the falling in with the views of your directors on this point would cause a regularity in the dividends, which would give a stability to the company that a fluctuating dividend tends to depreciate.

A vote of thanks to the Chairman and directors closed the proceedings.

GROGWINION LEAD MINING COMPANY.

An extraordinary general meeting of shareholders was held at the Cannon-street Hotel, on Tuesday, for the purpose of confirming the special resolution passed at the previous meeting, whereby the qualification for a director is to be fixed at the holding of 100 shares,

Capt. Ross, F.R.G.S., in the chair.

The notice convening the meeting was read.

The Chairman said that as a considerable number of shareholders were represented at the meeting by proxy he must consider that he was addressing them as well as those shareholders who were present in person. At the last meeting the object for which the resolution was passed was so fully discussed that it was unnecessary for him now to say much upon the subject, but he must remark that mature consideration of the motives that caused the shareholders to pass the resolution more than ever convinced him that it was hardly the most courteous proceeding for them to adopt towards the directors who had steered the company through its difficulties into its present prosperous condition; inasmuch as the time allowed by the terms of the resolution for those directors who were not properly qualified was so short, he thought it would be showing the present board more courtesy if it could be arranged in some way that the confirmation of the resolution should be postponed, so as to allow a little more time for the gentlemen to purchase the necessary shares to qualify themselves if they so desired to do. Therefore, he considered it would be better to adjourn the confirmation of the resolution for two months, so that the gentlemen might have ample time to comply with its provisions. As far as he was himself concerned it did not apply to him at all. He then proposed that the meeting be adjourned for two months.

Mr. Kerby said the course proposed by the Chairman was the right one, and, in justice to the shareholders, he wished to say that in all probability they did not know how many shares the directors held, and were not aware how the resolution would affect them. He did not believe the shareholders intended anything discourteous or disagreeable to the directors. It appeared that some of the directors did not hold the number of shares necessary under the resolution, and the result would be that immediately it was passed they would be disqualified. By the course now proposed—to adjourn for two months—it would give those gentlemen who desired to remain upon the board an opportunity of acquiring the necessary qualification. The market was such that they might have difficulty in buying the shares, and they ought to have reasonable time allowed for doing so. He felt sure the shareholders intended nothing discourteous. He seconded the proposition.

Mr. Hilton said, as representing a large number of shareholders, he had no wish to throw any unreasonable difficulty in the way of the board doing so. He had no personal object to serve, and certainly the last thing he wished would be to behave discourteously to the directors, who had, no doubt, been most indefatigable in bringing about so prosperous a state of things as at present existed. He, for one, considered that the directors, and the Chairman especially, deserved a substantial expression of gratitude from the shareholders, and he felt satisfied that in thus speaking he represented the feeling of the shareholders generally. He was quite willing to agree to the adjournment of the meeting.

The Chairman said he was obliged to Mr. Hilton for the remarks he had made. That gentleman was a very large shareholder, and entrusted with proxies from many members, and it was fair to assume that his opinion was also that of the shareholders generally. At the expiration of two months this resolution would be confirmed, and the directors would in due time forward to the shareholders a copy of other special resolutions which would, in their opinion, tend to simplify all questions of directorship in the future.

The motion for the adjournment for two months was put and carried.

The Chairman said he had no doubt it would be interesting to the shareholders to hear that the advices received from the mine that morning were exceedingly good. They had now emerged from what he might designate as the 40 ton per month period, and had entered upon the 50 ton per month period, so that their returns had already increased to the extent of 25 per cent., with a prospect of a still larger increase at an early date. He held in his hand a telegram received that morning stating that for the present parcel of 50 tons of ore, the produce of four weeks' working, 14*l.* 16s. per ton had been tendered, which he found was about 11s. per ton higher than the last parcel sold for, and that in its turn realised 1*l.* 4s. per ton more than the previous one. From this they might congratulate themselves upon the fact that the ore was improving in value, and also that the firm condition of the lead market induced the belief that yet higher prices would be attained. It was also very pleasing to find from the telegram he had referred to that the intermediate level to which he alluded so strongly in his opening address at the meeting on Oct. 22 as a most important point in the development of their property, was still being driven in good lead-bearing ground, and making very satisfactory progress. Everything was going on in the best possible manner, and the dividend which would be paid in December would be a substantial one.

A vote of thanks to the Chairman and directors closed the proceedings.

WHEAL PEEVOR MINING COMPANY.

A meeting of adventurers was held at the Account-House, on the mine, on Tuesday,—Mr. T. Pryor, purser, in the chair.

The accounts for the four months ending October showed a debit balance of 798*l.* The loss on the four months' working was 695*l.*, but, taking October month alone, there was a profit of nearly 300*l.* The agents' report stated that they had sold since the last meeting in tinstuff and black tin about 49 tons, an average of more than 12 tons a month, but, in consequence of having to provide a large quantity of timber for Sir Frederick's engine-shaft, and repairs to the whim engine, the merchant's bills may be considered excessive. Still, in opening out a young tin mine it will be almost impossible to keep down the bills as low as could be wished, but every effort will be made to work the mine as economically as possible. Perhaps at no former period were the prospects of this mine of a more hopeful or cheering character.

Capt. Abraham James said the coal supplied to the mine was of good average quality, and he had no cause for complaint in that respect. He could not at present hold out any hope that there would be a reduction in the consumption of coal during the winter; he had that morning been underground with Mr. Ward, had gone with that gentleman into the old men's sink, and had in his presence broken away a sample of stuff, which was brought to surface, and assayed. The result of that assay he now had before him, and he was proud to be able to tell them that it yielded a proportion of 7 cwts. 3 qrs. 4 lbs. to the ton, which was more than one-third tin.

Mr. Ward, in proposing the adoption of the report and accounts, expressed the opinion that adventurers should examine accounts for themselves. He was a great advocate for local meetings, and was satisfied that in Wheal Peevor they had honest and efficient agency.——Mr. Penrose seconded the resolution, which was carried.

The Purser then said he had received a letter from a former shareholder applying for a restoration of his 110 shares, which were forfeited in August last, and offering to pay up all arrears of calls, with interest at 5 per cent. In making this application the writer said that he had given a high price for his shares, had never trafficked in them, and that the circumstances under which they were forfeited were somewhat unusual, and not in the terms of the notice convening the first meeting.

Mr. Michell said the shareholders present could not entertain any such application, because that before any shares could be restored that had once been forfeited it was necessary to have the consent of every single shareholder in the mine.

Mr. Penrose differed from the last speaker. He certainly was not going to advocate the restoration of the shares, but as a matter of law he believed that a majority of the adventurers of any mine had a right to restore forfeited shares if they felt so disposed.

The Chairman explained, in reply to that portion of the letter which referred to the notice convening the meeting, that it was a perfectly legal notice, drawn up under very good advice, so that there could be no question as to the absolute forfeiture of the shares.

On the motion of Mr. Penrose, seconded by Mr. Nicholls, it was unanimously resolved that the application should not be entertained.—A call of 5s. per share was made, and it was resolved to offer the 188 forfeited shares by tender at 5*l.* 10s., minimum price.

The Purser expressed the hope that at their future meetings they would declare dividends. The mine was started with great expectations, and they had certainly been realised, for the lode in the bottom of the 48 had turned out to be worth considerably more than was anticipated in the original prospectus. They then thought that if they could return 10 tons of tin per month they should be very happy indeed, but they were now getting more than 12 tons, and they could not but regard this as highly satisfactory. (Hear, hear.)

Capt. James added that he did not see the slightest reason for supposing that those returns could not be kept up, and his own belief was that if the lode was as good below the vugh as it was above it, they would exceed 12 tons a month. He pointed out the worthlessness of knowledge to miners, remarking that science had never told him where he could find a course of tin or of copper ores. Theory was all very well up to a certain point, but practical experience was far superior to any theoretical notions. With such a movement underground as slides and cross-courses they might fairly calculate upon success in mining, and he was pleased to find that they had such a thing as a slide in their present engine-shaft. It inspired his mind with confidence that they should see better results below than they had seen above it.

The meeting then separated.

BROOKWOOD MINING COMPANY.

At a general meeting of adventurers, held at the purser's office, Liskeard, on Tuesday (Mr. T. K. Dymond in the chair), the accounts for sixteen weeks to Aug. 14, showed a profit of 753*l.* 0s. 1d., and also a balance in favour of the adventurers to same date of 1016*l.* 5s. 11d. A dividend of (800*l.*) 4s. per share was declared. The following report was presented:—

Nov. 17.—We have not done anything at the 120 since last meeting, although we have plenty of top water for our pumping wheel; but, owing to one circumstance and another, our efforts there have been thus far unavailable. Before the next meeting, I have no doubt, we shall cut through the lode, and open on its course. The lode in the 110 west is very large, about 7 ft. wide, and worth 12*l.* per fathom. The end has not opened up to our expectations. The lode in the 100 west is 4 ft. wide, and worth 10*l.* per fathom. There are four stopes working in the back of this level, and worth on the average 15*l.* per fathom. The lode in the winze in the bottom of the 100 west is 4 ft. wide, and worth 15*l.* per fathom. The lode in the 100 east is 4 ft. wide, and worth 15*l.* per fathom. Since my last report we have driven through a good lode for 10 fathoms, and worth 30*l.* per fathom; and the present end being still a good one, our prospects in this direction are encouraging. We have resumed the driving of the 90 fathom level east, and the lode yields stones of ore. Our idea is that this level, in a few fathoms driving, will enter a somewhat similar run of orey ground to that driven through in the level below. There are three stopes working in the back of the 90 fathom level west, worth from 13*l.* to 15*l.* per fathom. The foregoing are the principal operations, and although the western ends have not yielded in the 100 and 110 as well as the 80 and 90 fathom levels west, yet, taking into consideration the improvement in the 100 fathom east, which is to all appearance a new shoot of copper, I consider the mine is looking, on the whole, just as for some time past, and with present price of copper we may reasonably expect for the future the usual dividend.—Thomas Trevillion.

RICHMOND CONSOLIDATED MINING COMPANY.

The ordinary general meeting of shareholders will be held at the City Terminus Hotel, Cannon-street, on Wednesday.

The report of the directors congratulates the shareholders on the increased value and improved position of their property. The company has continued in quiet possession of the mine since the settlement of the lawsuits with the Eureka Company in June, 1873, and have been enabled during this period to carry on their mining operations without interruption; they have also obtained United States patents for their property, thus placing their title beyond dispute. It will be in the recollection of the shareholders that Mr. Probert returned from his first visit to Eureka in December, 1873, and Mr. Corrigan in January following; and that on Jan. 27 Mr. Probert gave to a meeting of shareholders a most lucid and interesting description of the mine, both with reference to its then present position and probable future prospects, and made numerous suggestions to enable the company to lessen the working expenses, and obtain a larger profit from each ton of ore raised.

The directors, having determined to erect refining works, prevailed on Mr. Probert to visit some of the smelting and refining establishments of France and Germany, so as to be in a better position to advise with them as to the description most suitable for this company, immediately after his return the directors ordered apparatus for refining and desilvering, similar to that in use at the establishment of Messrs. Luce, Fils, and Rozan, of Marseilles, where it has been in successful operation for some time, and which system is now in course of adoption at some of the largest establishments in this country. Mr. Probert left England again on June 5 to superintend the erection and starting of these works, and arrived at Eureka on June 28. As Mr. McGee, the late superintendent, was about to leave the service of the company, Mr. Probert, on the urgent request of his fellow-directors, undertook, pending the appointment of another superintendent, to attend personally to the company's affairs at Eureka. The directors are now in negociation with an experienced manager, whose services they expect to secure almost immediately, so as to be able to relieve Mr. Probert of this part of his present arduous duties. They cannot refrain from publicly thanking him for the sacrifices he has made in this respect, and the zeal and energy he has shown in all matters relating to the welfare of the company, a feeling which the directors are sure will meet with a hearty response from every shareholder.

The expenditure on capital account, in the purchase of new mines, additional buildings and works, defending mine, &c., has exceeded the amount authorised to be raised by shares by 55,285*l.*; from this 7995*l.* was written off last year out of revenue, and 12,000*l.* this year, leaving the expenditure still in excess 35,289*l.* The directors have appropriated, in further reduction of this amount, the sum received for premium on shares, and for proceeds of shares surrendered by the vendors, amounting in the whole to 11,900*l.*, leaving a balance to the debit of capital of 23,389*l.* The net revenue for the year amounts to 86,591*l.*, which, with a balance of 19,667*l.* brought forward from last year, makes a total of 106,258*l.* Out of this sum the directors have paid during the year the following dividends:—7s. 6d. per share on Oct. 13, 1873 = 19,911*l.*: 10s.—5s. on Jan. 10, 1874, and 5s. on Feb. 28, 1874 = 26,904*l.* 18s.; 5s. on May 15 = 13,458*l.* 4s.; 5s. on August 14 = 13,458*l.* 19s.: total, 27s. 6d. per share, or 27½ per cent. per annum, amounting to 73,733*l.* 1s., leaving a balance of 32,525*l.* 15s. 1d. Of this balance the directors have written 5000*l.* off "Defence of Mine Account," and 7000*l.* off "Construction Account," and they propose to carry to reserve the sum of 15,389*l.* 19s., which with the amount of 8000*l.* already standing to the credit of that account, will make a total of 23,389*l.*—a sum sufficient to meet the present overpaid balance on capital account, or, in other words, to provide out of revenue the whole of the expenditure on capital account in excess of the amount of the authorised share capital, and to carry forward a balance of 5135*l.* The directors recommend that a dividend of 5s. per share should be forthwith declared, payable on Dec. 14.

The total quantity of Richmond ore smelted during the year has been 28,165 tons, and of purchased ore 1997 tons, together 30,162 tons, producing 5130 tons of base bullion, of the estimated value of $1,779,231 (355,846*l.*) The total value of the base bullion (at assay value) produced in the year, as reported weekly by cable, amounts to $1,765,000, whereas the actual value amounted to $1,779,231, being $14,231 in excess of the amount reported by cable. In consequence of the unusually severe winter, and the consequent scarcity of charcoal, all the furnaces had to be shut down on Feb. 22. Smelting was not resumed until April 23, when one furnace was started, the three not being in blast until June. In July further difficulties occurred in the supply of charcoal, which at one time threatened the stoppage of all the furnaces, but, happily, an amicable arrangement was made with the charcoal-burners, and there has been since that time an unlimited supply.

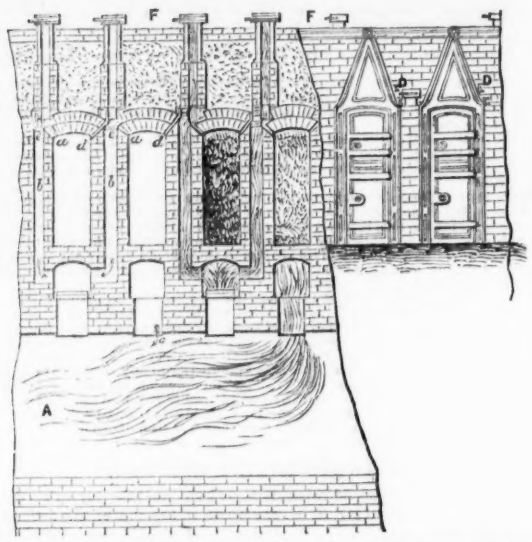
During the latter part of Mr. McGee's management explorations had not been carried on to any extent. On Mr. Probert's arrival he put a large force on this work in various directions, and the success attending his efforts has been beyond expectation. The latest explorations of Mr. McGee had laid bare poor irony ore for a length of 80 feet in the deepest workings of the Richmond vein, but fortunately in working upwards and sideways good ore in large masses was found, and thus what was thought at one time to be the worst point in the mine has proved to be one of the best. Explorations were also made under the Lizette tunnel, where splendid ore was found, and which is developing rapidly. Explorations were also made from the bottom of the McGee, or main shaft, at a depth of 400 feet below the surface of the ground, and here again a fine lode of ore of exceptionally high grade was found. The extent and value of the ore opened up by these explorations can hardly be estimated at present, but they are of the utmost importance to the company, and the value of the mine is very greatly increased thereby, the ores discovered being very rich carbonates.

Some inconvenience and loss in smelting has recently taken place from defects in the steam-engine. The mine of late has furnished more ore than could be smelted with the present furnaces; on August 31, 3802 tons had been accumulated on the dumps ready for smelting. The refining works will not be ready so soon as was expected, in consequence of the captain of the vessel which was chartered for the purpose declining to take the apparatus, on account of the size of the castings. The first portion did not arrive at New York until Sept. 8. In order to avoid further delay the directors have arranged to send the remaining portions by steamers as the buildings are in readiness for the machinery. The proposed railway to Eureka from Palisade station (on the Central Pacific Railway) is reported to be finished for a distance of 50 miles, where it is proposed to stop for the winter, thus leaving only a length of about 30 miles to be completed.

The disastrous position of many American mining properties has had a most injurious effect on the interests of this company. Taking advantage of the present state of these enterprises, false reports have been frequently circulated relative to the position of the Richmond Mine, calculated and intended to alarm the shareholders, and depreciate the value of their property. The directors have met these reports by the publication from time to time of correct information, and have thus been enabled to counteract to some extent the bad effects. There are times, however, when it is necessary for the directors to exercise reticence and caution in publishing information which, however desirable to be known by the general body of shareholders, may possibly be made use of on the other side adversely to the interests of this company. The directors, whilst desirous of avoiding the raising extravagant hopes, think it would only show weakness on their part if they hesitated to state their full conviction of the soundness of the property, and their great satisfaction at its present condition and future prospects.

[For remainder of Meetings see to-day's Journal.]

ECONOMIC MANUFACTURE OF COKE—THE COPPEE COKE OVEN.



Upon the first introduction of the Coppée system of coking at the works of the Ebbw Vale Iron and Coal Company's works, in Monmouthshire, it was pointed out that the advantages of the process were that the largest possible proportion of the carbon contained in the coal was retained, and the heat of the gases were utilised to the utmost by being applied both to the sides of the ovens and to the production of steam; at the present time there are upwards of 2000 ovens upon the Coppée principle, and it is gratifying to find that these statements have been fully verified, the invention being, in consequence, attracting much attention. The great economy of the Coppée system (the development of which in this country has been undertaken by an influential company—the COPPEE COKE COMPANY, of Gracechurch-street—which has already met with considerable success) is no doubt principally due to the rapid combustion in the surrounding flue of the ovens, of the volatile gases surrounding the coal creating a very high temperature, which is uniformly maintained—the ovens, in fact, never being permitted to cool. The Coppée ovens, as will be seen from the above diagram, are placed together in groups of two and two. The flames from the two ovens of the same group pass through a series of openings, *a*, *a*, made in the arch, and circulate through suitable channels around the oven, then passing beneath the sole of the adjacent oven enter by a vertical flue, *c*, into a common conduit, A, which first goes beneath the boilers, and then leads to the chimney. The gases are burnt in the channels by two sets of jets of warm air, the one set entering the oven at *d*, *d*, and the other entering the vertical flues at *e*, *e*. The admission of air is regulated in the former case by the slide-bars, D, and in the latter case by the slide-bars, F. Galleries under the brickwork are traversed by currents of cool air, which cool and preserve the construction. The air enters at the end of the series, and above the level of the ovens, descends and traverses four brick galleries below the ovens, and on reaching the centre of the structure ascends to flues which lead through the ovens to the chimneys. To diminish the loss of heat the tops of the ovens are covered with a bed of clay about 18 in. thick, on which bricks are laid. The ordinary dimensions of an oven are—Length, 9 m.; width, 0·45 m.; height, 1·20 m., for a coking of 24 hours. For a coking of 48 hours the width is 0·60 m., and the height 1·70 m. The ovens are quickly filled by three charging hoppers.

The ovens are usually charged with coal once every 24 hours, and the coals are crushed before being placed in the oven to a coarse dust. The ovens are filled with coal from the top, by means of three holes, over which three wagons containing the exact quantity of coal to be used are placed before the coke is removed from the oven. At each end of the oven are two doors, the lower being 3 ft. and the upper door 1 ft. in height. Between each two ovens are a number of vertical channels, which lead from the top of the oven, and convey the gases to the horizontal flues, one of which runs under each oven. The ovens are arranged, the gases from each two ovens pass down the vertical channels referred to, passing into the horizontal flues, from which they take their course into a large channel running at right angles to the ovens. The hot gases pass from this channel either direct into the chimney or under one or several boilers. The great heat which the gases leaving the ovens attain has made it necessary to have a series of cooling flues placed beneath the flues for carrying the gases. These flues are open at each end of the block of ovens, the air passing in at one end and out at the other.

The essential feature of the Coppée system is the coupling of the ovens in pairs, so that the gases from the one mingle with those of the other, and burn the coke at a much higher temperature than could otherwise be the case, the arrangement having also the important effect of maintaining this intense heat constantly and uniformly throughout the group; but there are other characteristics which are of considerable importance. Amongst these are the double admission of air, so as to facilitate combustion, the result being the entire prevention of smoke; their small width and an arrangement of channels especially suited for poor coals; the combination of all the hot gases in a large conduit beneath the ovens, and their utilisation for heating boilers; and the galleries for cooling and preserving the brickwork. It will thus be seen that by the Coppée system of constructing coke ovens a large surface of small coal is exposed to a very high temperature. This high temperature is always maintained, varying only very slightly at any time. Consequently there results, firstly, rapidity of operation. One Coppée oven will turn out at least as much as two ordinary beehive ovens. This is easily understood when it is remembered that the coke from the Coppée oven is cooled outside, and the oven re-filled in a few minutes. The coal, falling into a narrow chamber raised to an intense heat by the previous charge, commences burning on all sides at once, and, being very fine, it is in the best condition for giving off its gases rapidly. By the arrangement of the flues and the plan of discharging alternately, the cool gases given off by the oven just filled promptly mingle with those of the neighbouring oven, which by this time is giving off its gases at their highest temperature. The mingling of the gases raises the temperature of the one oven almost immediately to that of the other, thus a very high and uniform temperature is maintained. The thin layer of small coal burns on all sides at once, the volatile gases are rapidly expelled, and the oven is ready to be drawn in one-third the time required by the ordinary ovens.

The advantage of keeping the ovens constantly heated will be readily understood. Usually the oven is cooled after each charge has been coked, the next charge being necessarily thrown into a cooled oven. A vast quantity of heat is absorbed in raising the temperature of the oven sufficiently to coke the coal; the volatile gases escape directly into the atmosphere and do very little towards burning the coal, which in these ovens is chiefly effected by the combustion of a portion of the fixed carbon. The coal commences to burn at the top, it cokes gradually downwards, part being completely burnt away before the rest is ready, hence the loss in yield. In the Coppée ovens a thin layer of ground coal is introduced into an oven already in an incandescent state, the coal is attacked on every side at once, the volatile gases of neighbouring ovens mingle and are consumed in flues all round, keeping up the high temperature. The entire contents of the oven are coked all together before any of the fixed carbon has been burnt. Within 2 per cent. of the theoretical yield can be obtained in the shape of coke. The third result is an improved quality of coke. Only a little reflection will render it apparent that the high and even temperature to which a thin layer of coal reduced to small particles of equal size is submitted by the Coppée system will bake the coke harder and denser than the old ovens will. Presuming that the coal from which it is made is clean, hardness and density are the tests of quality in coke which has to be subjected to a blast, and to bear a weight of metal in a furnace.

The Coppée system is likely to be as well received by the workmen as by their employers, for, although there is a slight saving in labour, it would not lessen the number of hands to be employed, whilst the advantages which the master will secure in other directions will entirely obviate the necessity of lowering the wages of the men. For the utilisation of the waste gases for the production of steam the Coppée ovens are particularly adaptable. No extra expense is required to the ovens themselves for flues, &c. There is only the ordinary cost of boiler and chimney, which can be added to a group of ovens at any time. The quantity of steam produced varies with the quality of coal and the system of boiler. From 2 to 4-horse power per oven can be obtained. Experience on the Continent has shown that some qualities of coal, which are not sufficiently bituminous to coke in ordinary ovens, will coke in the Coppée ovens. There are seams of coal in England and Scotland of which the small coal will not coke, but which might probably be utilised for this purpose if treated on the Coppée system; and, although upon comparing the first cost of the ordinary and of the Coppée oven, the first cost of the latter is nearly double, this is much more than compensated for by the fact that the Coppée oven produces $2\frac{5}{8}$ the quantity of coke in a given time. The Coppée has, moreover, the important advantages of occupying but one-fifth the space, and that the Coppée oven can be emptied and re-filled in eight minutes, whilst the ordinary oven requires over sixty minutes. The coke produced by the new system is firm and dense, the proportion of breeze and refuse is materially reduced, and the general cost of the labour charge per ton of coke made (11d., as compared with 1s. 3d.) scarcely exceeds two-thirds. Owing to the quality of the materials, the very regular action and the non-application of water inside the ovens, the cost of repairs is very small, and it is stated that a block of ovens in Belgium, which has been twelve years at work, has cost less than 7s. per oven per annum for repairs.

As the gases evolved from the coal when the Coppée oven is used are all entirely consumed, any nuisance to the neighbourhood, either from smoke or otherwise is entirely avoided, and the facilities which the new ovens offer for the consumption of slack—the coal being, as already mentioned, used in the form of powder—will be recognised as an important advantage.

ECONOMIC MINING—DYNAMITE.

Although some trifling formalities have to be complied with before dynamite can be used in a mine, the Government license is so readily obtainable that there is practically no restriction to its adoption beyond what is absolutely necessary to ensure safety to the miners themselves; if similar restrictions were placed upon the use of gunpowder the miners might well congratulate themselves, for the experience of the past four years has proved that the effect of the caution used has been to keep dynamite free from the accidents which have continued without diminution where gunpowder is still in use. The immensely greater power of dynamite as compared with ordinary blasting powder has been so frequently referred to in the *Mining Journal* that it is unnecessary to repeat it, and it is now generally acknowledged that no other explosive agent at present known approaches it in point of safety. A large package of dynamite may be thrown from any height or sustain any amount of shock, and if placed in an open fire or otherwise set light to will burn harmlessly away without exploding. Owing to these inert properties, it requires a strong percussion cap, or detonator ignited by a fuse, or by an electric spark, to make it explode, and hence its great safety; yet a few ounces of dynamite properly exploded will shatter the heaviest blocks of wrought-iron or steel on which a tenfold quantity of gunpowder would produce no effects whatever.

The complaint which has sometimes been urged against dynamite that it evolves noxious fumes is valid when, from carelessness and inattention to rules on the part of the miner, the combustion is imperfect, and the part of the material is decomposed instead of exploded. When fired with a match or fuse in an open space or partially confined it gives off nitrous fumes, the irritating character of which is well known in the chemical laboratory, but when fired, as it always should be by a detonator, its power is enormous, and neither noxious fumes nor smoke are given off. When in its proper condition dynamite is a soft pasty substance, and it is in this state only that it should be used for blasting purposes, as if it be permitted to harden or freeze, as it will do in cold weather, perfect combustion is impracticable, and much of the explosive force is lost; as the hardened or frozen dynamite can, however, be readily restored to the pasty condition by warming, there is no practical inconvenience from its hardening. As to the economy of dynamite, it is due to the great saving of labour effected by its use, for it is the labour not the powder which is the great expense in mining operations. With dynamite smaller and fewer bore-holes are required, hence great saving in tools and fuse, and as it requires no tamping (loose sand, clay, or water being sufficient), there is thereby perfect immunity from accidents in stemming bore-holes as well as saving of time and expense. In blasting under water or in wet ground dynamite is particularly valuable, as water does not destroy its explosive properties, and the extreme velocity of explosion makes it as effective in fissured as in sound rock, so that blasting with it can be more rapidly performed than with gunpowder, which is at all times important, and especially so in sinking shafts and driving tunnels.

Fig. I.

With regard to the cost and mode of using dynamite, it should be mentioned that there are two kinds in general use; the No. 1, which is especially adapted to hard or wet rock, and costs 2s. per lb. in cartridges, and the No. 2, which is adapted for the softer rocks and for coal working. The former is mostly used in cartridges 1 in. diameter and 1 in. to 4 in. long; though for very heavy blastings it is put up in rubber-lined bags containing from 5 lbs. to 10 lbs. A blasting charge may consist of one or more ordinary dynamite charges with a primer cartridge, having a detonator with fuse affixed inserted therein. The fuse sets light to the fulminate of the detonator, exploding which in its turn explodes the dynamite. The mode in which the charge is prepared, and the operations of loading a borehole are conducted, is this. In the first place a Bickford fuse is cut clean and inserted into a detonator cap, till it reaches the fulminate. The open end of the detonator cap is then squeezed to the fuse with a pair of nippers. The squeezing is important, as it not only prevents withdrawing the fuse from the detonator, but also developes the power of the fulminate. When intended for use

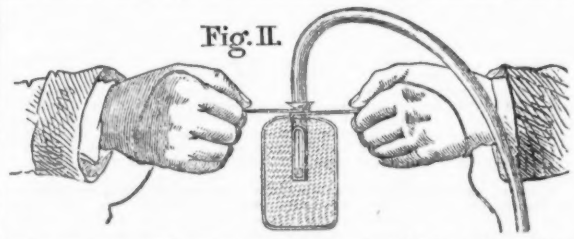
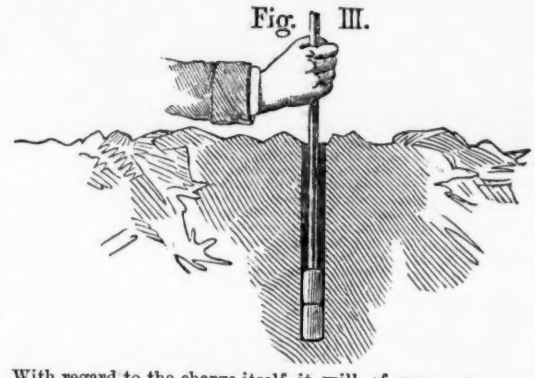


Fig. II.

under water, or with water tamping, care should be taken to have the open end of the detonator, after the fuse has been inserted and squeezed, made water-tight at the junction of cap and fuse with white-lead, grease, tar, or otherwise, to prevent the fulminate from getting damp.

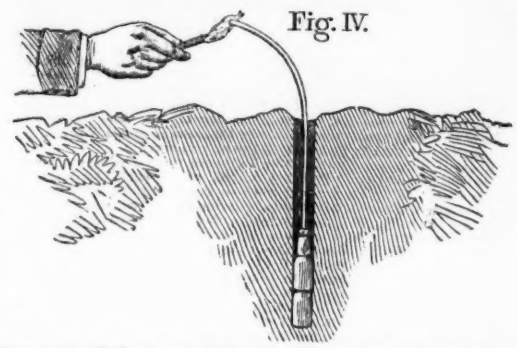
The capped fuse being thus prepared, a primer cartridge (which is readily distinguished from an ordinary cartridge, because "primer" is printed in red upon it) is opened at one end, the detonator cap with fuse affixed inserted to about half its length in the primer, and well secured with a string. It is essential that the cap or detonator should not have more than three-fourths of its length inserted into the dynamite, as, otherwise, the fuse may set fire to the charge before the fulminate in the cap is exploded, the result being considerable loss of power.

Fig. III.

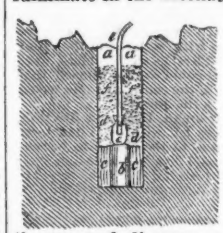


With regard to the charge itself, it will, of course, depend upon the character of the hole and the work to be done. One or more ordinary cartridges (not primers), as the height of the charge may require, are inserted into the borehole, and each cartridge is squeezed home separately with a wooden rammer, so as to completely fill the borehole. It is scarcely necessary to mention that iron should never be used in squeezing dynamite cartridges.

Fig. IV.



The charge being properly in position, the next step is to prepare for exploding it. Over the charge the primer, with detonator and fuse affixed, is inserted, but not squeezed, and loose sand or water is poured in as tamping; the charge is then ready for firing. It is essential that good fuse, which lets out no sparks sideways, should only be used, it being very important that the fire should reach the fulminate in the detonator cap without previously firing the dynamite. Should the miner not have primers at hand he may use a short ordinary cartridge as a substitute.



In using the No. 2 dynamite the charge is prepared and the bore-hole loaded much in the same way, but in blasting coal, slate, marble, granite, freestone, or any other material which it is desirable to obtain in large blocks, cartridges of a small diameter should be used in wide bore-holes. The intensity of action and crushing effect of the dynamite are thus obviated. In the annexed diagram, *a*, *a*, is the bore-hole—say, 2 in. diameter; *b*, the cartridge, from $\frac{3}{4}$ to 1 in. diameter; *c*, *c*, a paper plug; *d*, *d*, air space; *e*, the fuse, with the detonator cap affixed; and *f*, *f* the sand tamping.

For the safe use of dynamite, and its treatment in cold weather, the BRITISH DYNAMITE COMPANY, who are the sole manufacturers in Great Britain, supply very explicit directions. They explain that dynamite becomes frozen at about 40° Fahr., but thaws and resumes its proper pasty condition when warmed. Never use frozen cartridges. Dynamite must not on any account be put into the bore-holes or applied in any way for blasting purposes in a hard or frozen state. Frozen dynamite cartridges are easily and safely thawed and made to resume their pasty condition either by keeping them for some time in the breeches pocket, or by putting them into a water-tight tin can, which should then be placed in a vessel of hot water till the cartridges have resumed their pasty condition. Accidents have occurred through warming cartridges on or before stoves and fire-places; this is highly dangerous, for dynamite when slowly heated to 420° Fahr. is rendered very sensitive, and liable in that condition to explode with great violence. Special portable warm water heating pans are supplied by the company or their agents wherein the dynamite is kept warm, and in a soft pasty state for several hours in the coldest weather. It is mentioned that in warm countries open boxes of dynamite should never be exposed to the direct rays of a trophical sun. Complaints of missfires, fumes, and inferior blasting power they consider to be a sure sign that the workmen have not implicitly followed the company's printed instructions. A missfire is either due to a defect in the fuse, the want of making water-tight the detonator cap, and securing it to the primer, or the use of cartridges not thawed or only imperfectly thawed. Noxious fumes and inferior blasting power also indicate the withdrawal of the detonator cap from the primer, or the use of frozen dynamite, and it should be borne in mind that dynamite fired by a spark gives off nitrous fumes, while no fumes are produced by exploding it properly with a detonator cap.

There can of course be no positive rule for blasting with dynamite applicable to every case, nor do such exist for any other explosive. Something must always be left to the skill and judgment of the practical miner; but a fair trial with dynamite never fails to prove a complete success. The very first blasts are generally conclusive as to the great superiority of dynamite over gunpowder, but its full economical value can only appear when workmen have gained experience enough not to waste its power by overcharging, or on the other hand, to attempt impossibilities. The general rules are to diminish the diameter of the borehole, or increase its angle and depth, so as to utilise the greater power of dynamite by giving task-work, allowing liberal terms until the miners have obtained sufficient experience with the new explosive, and to prohibit absolutely the removal of the tamping in cases of miss-fire unless water tamping has been used. If the accepted rules for its use be attended to in their integrity there can be no doubt that dynamite will prove a valuable and safe aid to the miners, and as the company referred to supply the requisite forms for securing the necessary Government licenses there is nothing to prevent its speedy adoption generally.

NEW EXPLOSIVE.—Mr. R. GOTTHEIL has patented (for the Rhenish Dynamite Manufacturing Company, of Opladen) the employment of an explosive compound consisting of a solution of a hydrocarbon and an acid hydrocarbon in nitro-glyceerine.

LITHOMARGE.—Mr. J. G. WILLIAMS, of Bayswater, has patented some improvements in utilising lithomarge, and in apparatus for grinding it and other substances. The inventor describes the use of lithomarge in a finely divided state as a substitute for fullers' earth in manufactures. Its use in a finely divided state to mix with pulp for paper or pasteboard, and its use in admixture with lime, and the mixture burnt in the manufacture of hydraulic cement. He further describes a rotating apparatus or machine for grinding lithomarge and other mineral as well as vegetable substances to a fine powder, the fine material being carried out of the machine by means of a current of air applied for the purpose.

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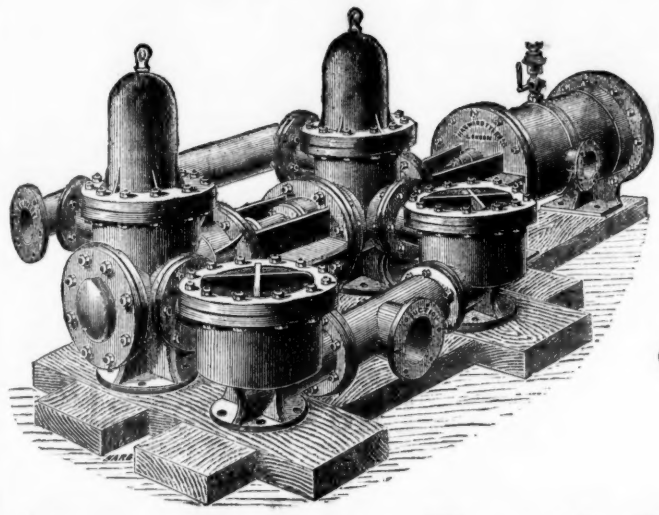

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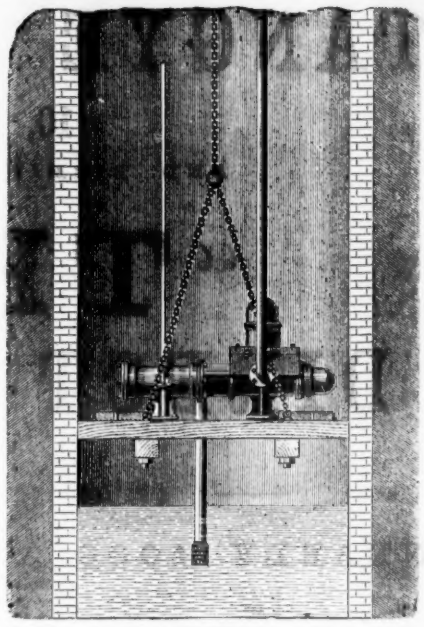

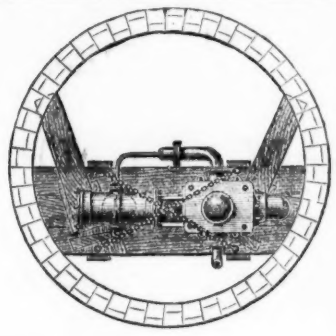

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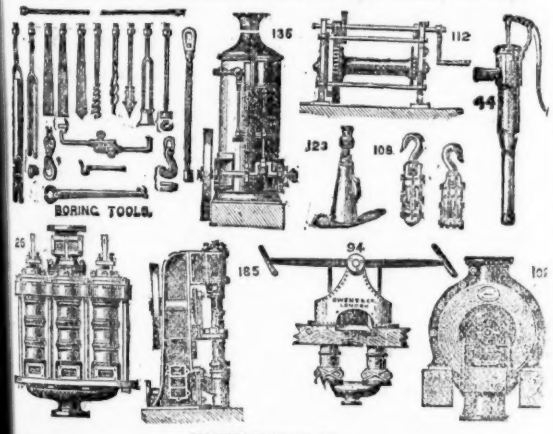

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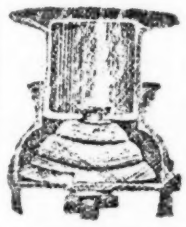

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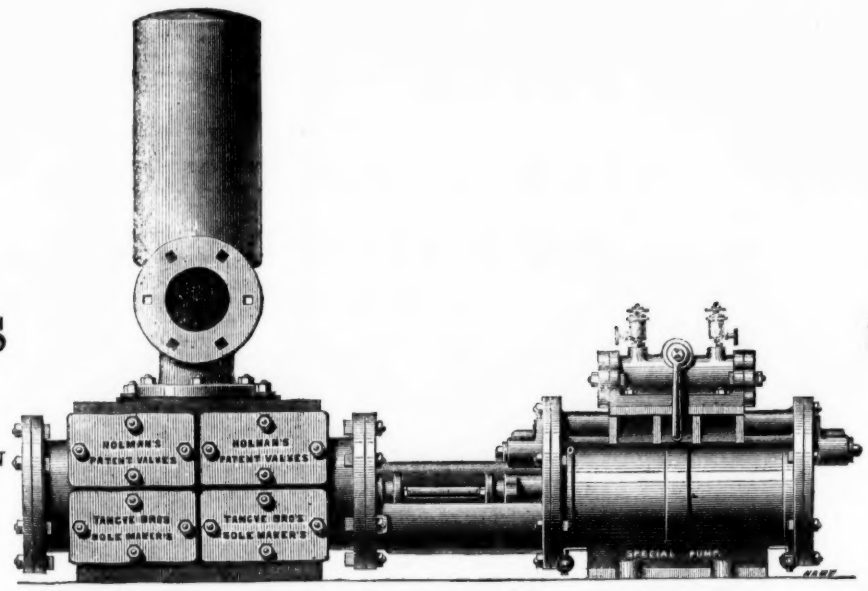

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Diameter of Water Cylinder ...In.	1½	2	3	4	3	4	5	3	4	5	6	3	4	5	6	7	4	5	6	7	8	5	6	7	8	9	5	6
Length of Stroke .....In.	9	9	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	18	12	12	12	18	24	12	12
Gallons per hour	680	815	1830	3250	1830	3250	5070	1830	3250	5070	7330	1830	3250	5070	7330	9750	3250	5070	7330	9750	13,000	5070	7330	9750	13,000	16,519	5070	7330
Price .....£	16	18	20	25	2210	27 10	32 10	25	30	35	40	30	35	40	45	50	40	45	50	55	65	50	55	60	70	85	55	60

CONTINUED.

Diameter of Steam Cylinder..In.	10	10	10	10	12	12	12	12	12	12	14	14	14	14	14	14	16	16	16	16	16	18	18	18	18	18	18	18
Diameter of Water Cylinder..In.	7	8	9	10	6	7	8	9	10	12	7	8	9	10	12	14	8	9	10	12	14	9	10	12	14	16	12	14
Length of Stroke .....In.	12	18	24	24	18	18	18	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
Gallons per hour	9750	13,000	16,519	20,000	7330	9750	13,000	16,519	20,000	30,000	9750	13,000	16,519	20,000	30,000	40,000	13,000	16,519	20,000	30,000	40,000	16,519	20,000	30,000	40,000	50,000	30,000	40,000
Price .....£	55	75	90	100	75	80	85	110	120	140	110	120	130	140	160	180	140	150	160	180	200	190	200	220	240	260	220	240

Intending purchasers of Steam Pumps would do well to observe the great length of stroke, short steam cylinder, and short piston of the "Special" Steam Pump, as compared with the short stroke, long steam cylinder, and long piston of the Pumps of other makers, as the efficiency and durability of the machine, and the space occupied by same, greatly depend upon this. The advantage of long strokes will be obvious when purchasers are reminded that each set of suction and delivery valves of a "Special" Steam Pump with 24 in. stroke, running at 120 ft. per minute, would open and close only 30 times per minute, as against 120 times per minute in a Pump with only 6 in. stroke performing same duty.

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TURNS WASTE STEAM INTO GREAT POWER.

REQUIRES NO THREE-WAY COCKS, CHECK, or REGULATING VALVES.

SAVES HALF ITS COST IN PIPES AND CONNECTIONS.

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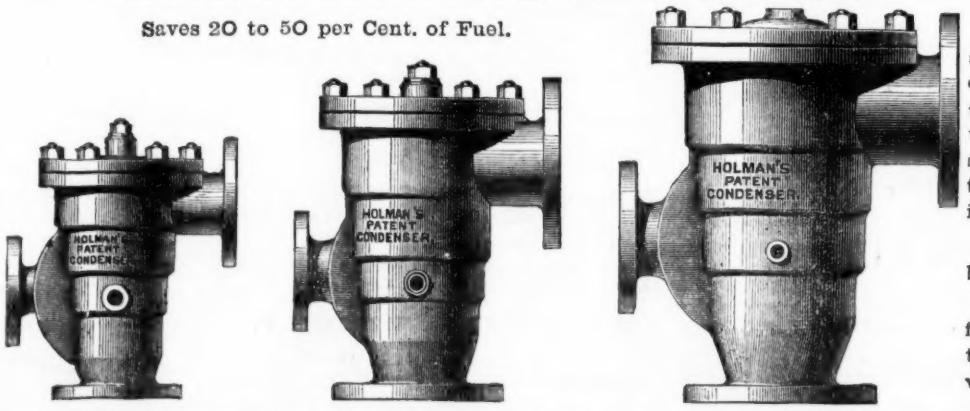
REQUIRES NO EXTRA SPACE.

Saves 20 to 50 per Cent. of Fuel.



These Condensers are made to suit any size and kind of Steam Pump. They form a part of the suction pipe of the Pump, and while they effectually condense the exhaust steam, they produce an average vacuum of 10 lbs. per square inch on the steam piston, increasing the duty of the Engine, and effecting a saving in fuel of from 20 to 50 per cent.

In Mining operations these Condensers will be of great value.

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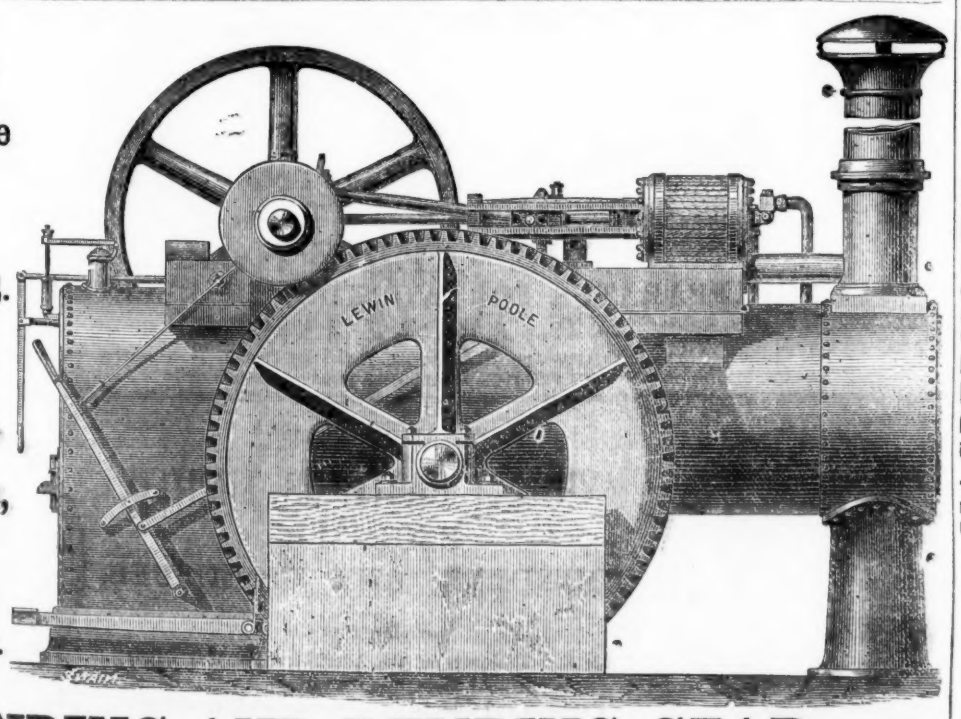

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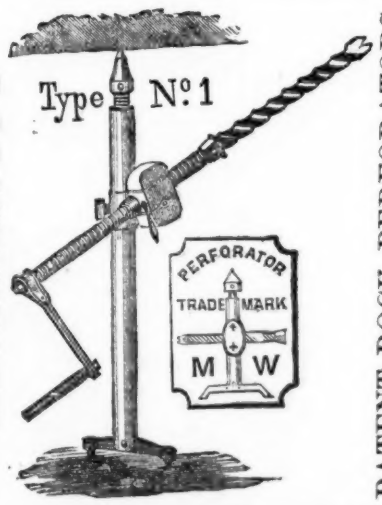

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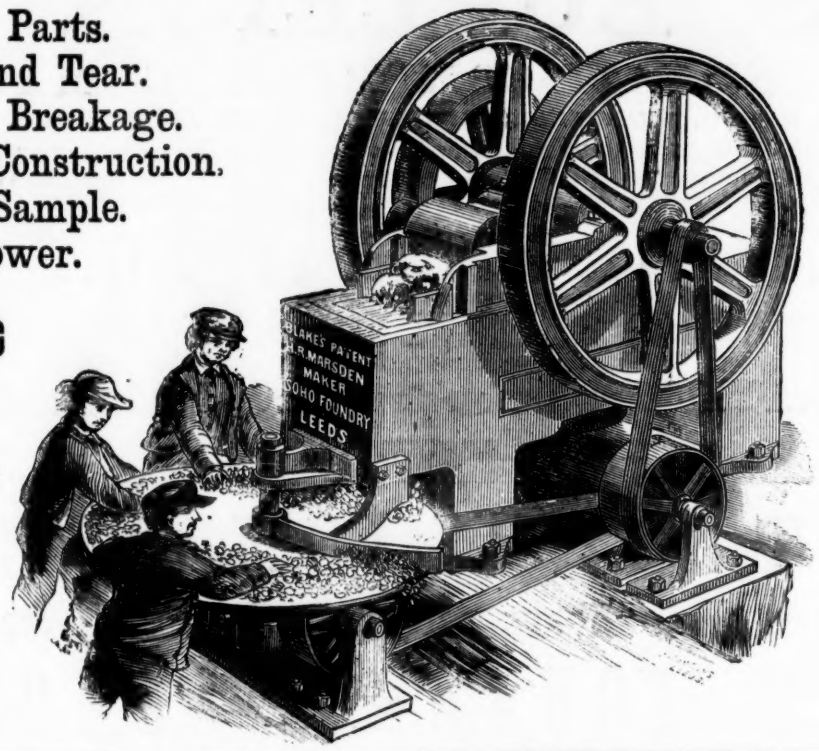

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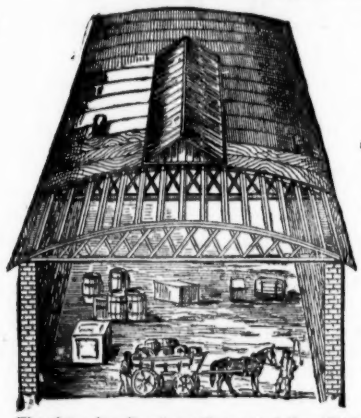

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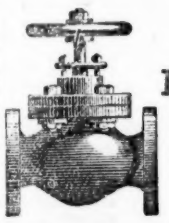

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